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SHIPBUILDING AND SHIPPING RECORD. *December* 16, 1915.
REGISTERED AT THE G.P.O. AS A NEWSPAPER.

SHIPBUILDING AND SHIPPING RECORD

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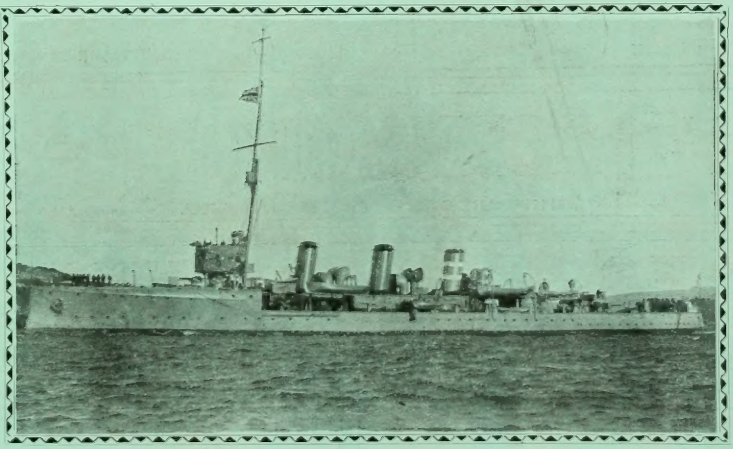

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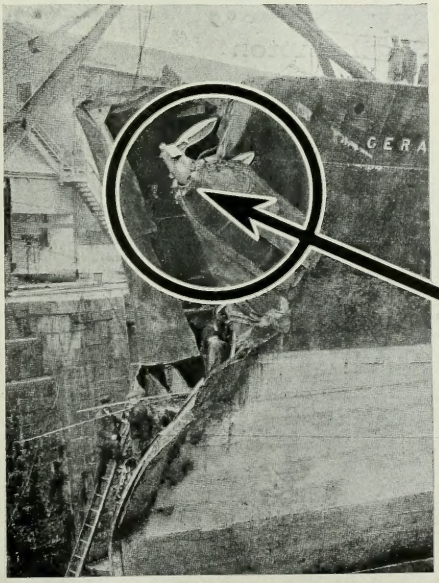

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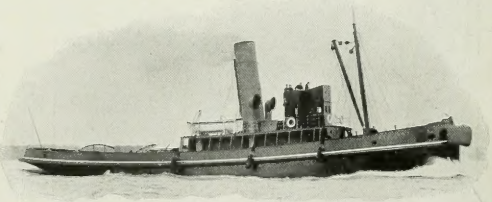

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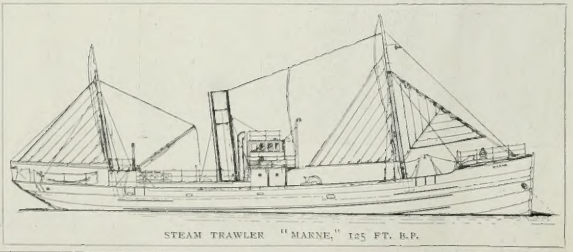

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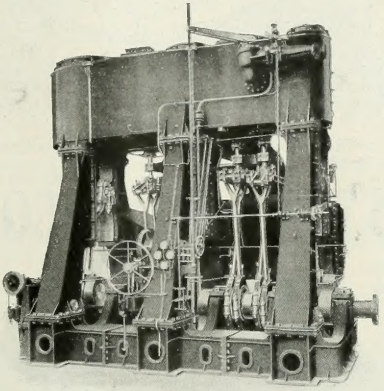

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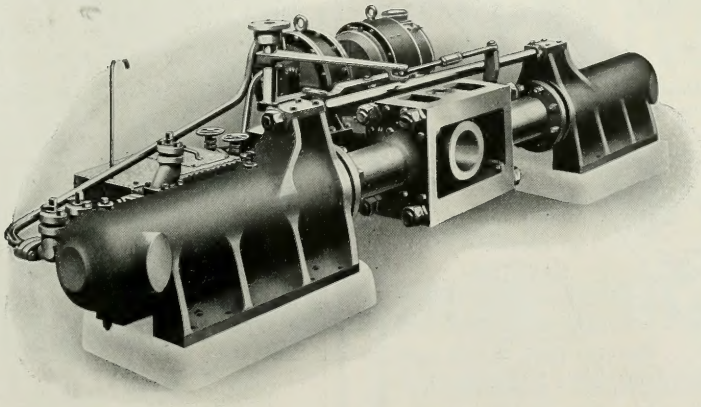

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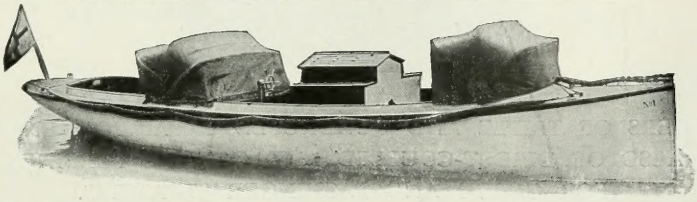

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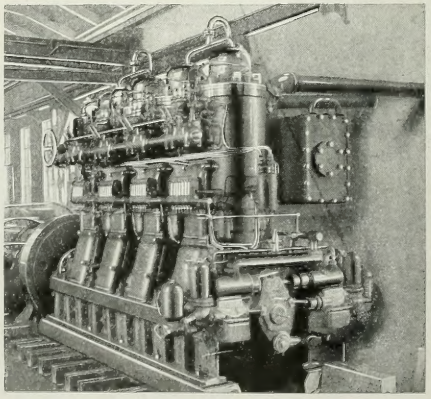

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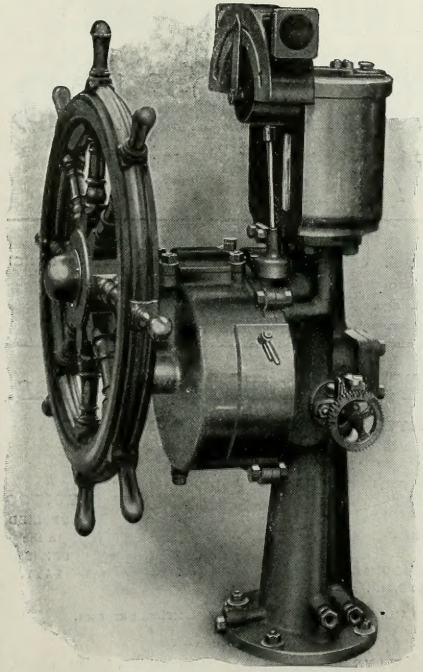

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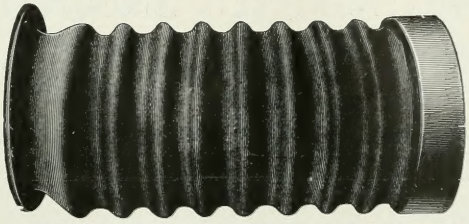

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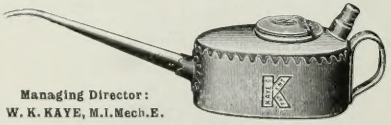

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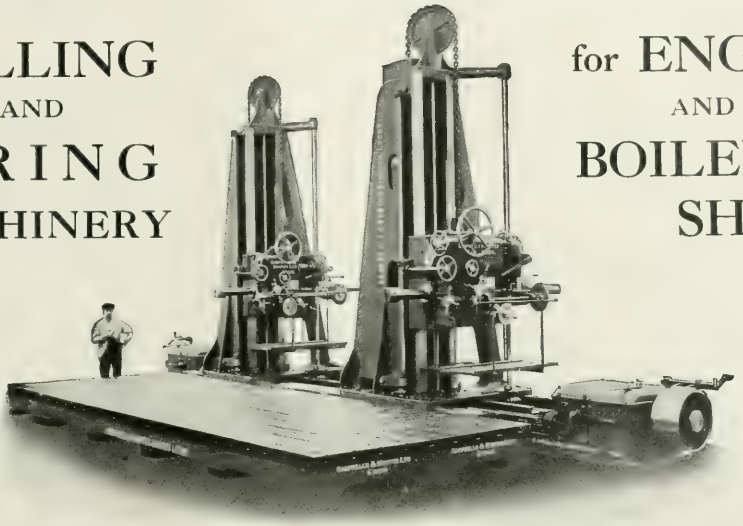

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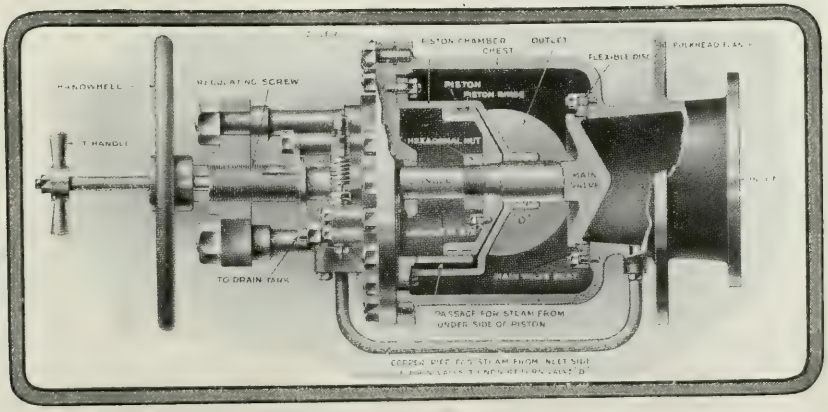

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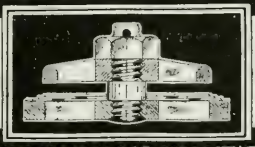

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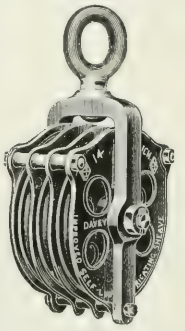

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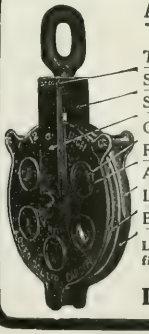

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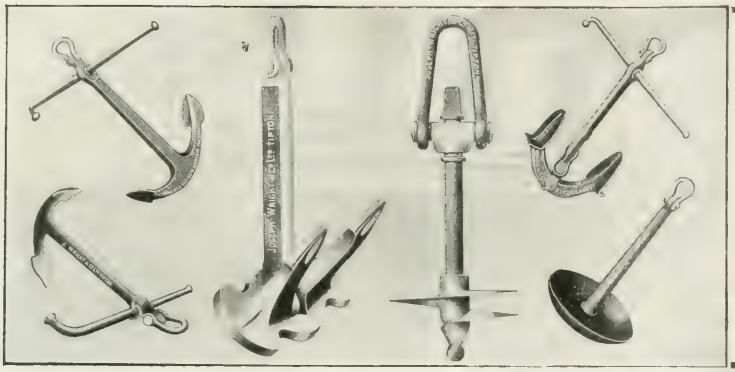

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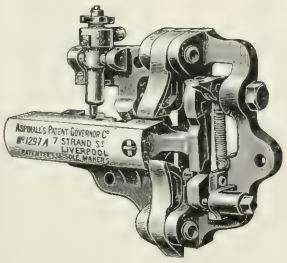

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What is a Workman?

THE need for greater precision in the terminology of the Munitions Act is shown by the absolutely contrary decisions to which Local Munitions Tribunals are coming, with reference to the definition of the word "workman." Some time ago, the Newcastle Tribunal Chairman decided that a draughtsman was a workman within the meaning of the Act; a little later, he decided that a timekeeper was not a "workman." On Saturday, the Chairman of the Liverpool Tribunal said he was satisfied that, in the absence of a definition in the Act, the word "workman" must be construed in the ordinary sense of a working man and that a draughtsman did not come under that category. It is not without reason, therefore, that in the Amending Act, there is a schedule of occupations to which the Act does apply.

Shipbuilding and War Work.

The pressure of war work brought mercantile shipbuilding practically to a standstill in the early stages of the war, but the ravages of mines and submarines whereby something like a year's output has been destroyed, has brought the shortage of tonnage more than ever acutely before the country. Consequently owners whose ships were under construction when war broke out and who have not yet obtained delivery are pressing for vessels ordered before the war. The Admiralty have been asked to grant facilities for at least the completion of vessels on which construction has been delayed and a small committee of inquiry has been investigating the question. We understand that the official attitude is that facilities might be granted for the completion of vessels which have been actually launched. This limitation reduces the number of vessels available for repairing the ravages of the war to relatively insignificant proportions, and it is to be hoped that some further elasticity may be granted to enable owners to place more ships in service. The question is complicated by the marked disinclination of the men to turn from war work to mercantile construction excepting at the high wages rates paid for the former class, and this, together with the enormously increased cost of materials, makes the problem a very perplexing one for the builder who contracted for the ships on a very narrow margin of profit with labour and materials at the low pre-war standard.

Broker Underwriters.

Much has been written in the past on the subject of marine insurance brokers who also carry on the business of underwriting, and a daily contemporary has again brought the matter under discussion. What is overlooked in most discussions on this subject is the fact that on a risk of any importance the underwriter broker is not the sole determining factor in the settlement of claims. This is particularly the case in hull risks for time. The claim has to be subjected to an average adjuster before being presented to the leading underwriter for settlement, and the fact that several big companies have settled a claim is no guarantee that it will be put through by those following them on the slip, whilst on the other hand he would be a bold man who stood out against a claim that had been settled by the majority of underwriters on the risk. In any case the matter resolves itself into a question of good faith, the basis of all insurance transactions. A client who cannot trust his broker to guard his interests in all circumstances is in an unhappy position indeed, but we doubt if any such exist.

Capsizing in Dock.

Though not without precedent, the casualty to the steamer *Coonagh* in the Alexandria Dock, Liverpool, is of an unusual nature. The vessel was loaded with a valuable cargo, principally wax, and should have sailed on December 8. Shortly before undocking was to have commenced her cargo was found to be on fire and a serious outbreak soon manifested itself. Prompt measures were taken, the fire brigade pumped water into the blazing holds, and appeared to be meeting with success, when the quantity of water in the vessel caused her to break her warps and turn turtle in the dock. An unfortunate feature of the accident was the death of the captain, who slipped between the burning vessel and the dock wall when she heeled over, and perished before assistance could reach him. The *Coonagh*, which, until recently, was known as the *Almagro*, is a vessel of 1,393 tons, built in 1904, by Sir Raylton Dixon & Co., Ltd., and had just been acquired by the Cork Steamship Co., Ltd. The salvage of the vessel is not impossible, but will prove a long and costly business, while the damage done by fire will in itself amount to a heavy claim on the insurance policies. Divers are at work attempting to pass wire hawsers under the vessel, but the fact that she has settled in the mud is making the operation difficult, while the Harbour Board's inability to empty the dock of water before January 6 precludes any serious attempt being made before that date.

Recent Casualties.

When the steamer *Teresa Accame* was towed into Las Palmas last week with her propeller gone and her tail shaft fractured, it recalled to those who looked her up in Lloyd's Register that she is the vessel which holds the record among steamers for drifting. It was in June, 1899, when as the New Zealand Steamship Company's liner *Waikata* outward bound to New Zealand she lost her propeller and drifted helpless for over three months before being picked up and towed into Fremantle. She is now owned by Fratelli Accame de Luigi of Genoa, being a vessel of 4,742 tons built by W. Doxford & Sons, Ltd., in 1892. At the time of the accident she was bound from Savona to Norfolk Va. in ballast. The steamer

St. Kilda which has been wrecked at Little Miquelon, whilst bound from Sydney C.B. to St. Pierre Miquelon with coal, is a vessel of 3,947 tons register, built in 1911 by W. Hamilton & Co., Ltd., and owned by Rankin, Gilmour & Co., of Liverpool. These owners have an excellent record as far as wrecks are concerned. Since 1883 only two other vessels of their fleet have been lost by stranding, the *St. Hugo* wrecked at Tanegashima in June, 1911, whilst bound from Yokohama to Müke in ballast; and the *St. Pancras* wrecked on Samarang Bank near Labuan whilst bound from Manilla to Marseilles with a cargo of sugar. A fire on the steamer *Tyninghame* bound from New York to the United Kingdom with sugar, might have had more serious consequences had it not been discovered shortly after leaving port. As it was she had to return and receive the attentions of a fire float whilst the nature of her cargo makes it probable that fire and water damage will result in a serious claim on her insurances. The *Tyninghame* is a vessel of 3,740 tons register built by Bartram & Sons in 1909 and owned at Cardiff by Griffiths, Lewis & Co., who insure her on a value of £50,000.

Shipping and Taxation.

The Finance Bill with its new burden of taxation and its novel excess profits duty has now passed through the House of Commons, and has therefore taken final shape. We need not reiterate our comments and criticisms upon its effects on the shipping industry, but we still believe that they were fairly directed towards the more vulnerable parts of the measure. It is to be hoped that where the referees are entrusted with a discretion in relation to matters connected with the industry they will exercise their powers with due regard to the maintenance of its future economic stability and development. Before passing from the Bill we draw attention to an amendment introduced at a late stage by the Chancellor of the Exchequer mainly, although not exclusively for the purpose of dealing with the relationship of single ship companies to the computation of excess profits duty. It does not mention them specifically and its language is technical in the extreme. But there is no doubt that single ship concerns come under it. Mr. McKenna indicated as much in so many words. It lays down that where in a business there is a power to substitute one set of assets for another the substitution is not to constitute a change of ownership. When a change of assets has been carried out the capital of the business for the purposes of the excess profits duty shall be taken to be increased or decreased as the case may be only by the amount of the difference between the price of the assets purchased and the price of the assets sold. Mr. McKenna gave this illustration of the working of the amendment. A ship entered in the books at £50,000 is sold for £100,000. A new ship is bought for £105,000. The capital of the company would be £50,000 plus £5,000, instead of £100,000 or £105,000.

"Black listing" German Traders.

Shipowners will do well to note the provisions of the Trading with the Enemy (Extension) Bill which has been read a second time in the House of Commons. At present English law permits trading with enemy subjects who are residing or have a commercial domicile in a neutral country. It is no offence for British ships to carry the goods of these people or for British banks to finance their trade. Not residing in Germany, they are not accounted belligerents for trading purposes. That is how the law stands and in some degree owing to its indifference, German firms have been doing a good trade in a number of neutral countries. South America in particular has been the sphere of their activities. Their trade undoubtedly has resulted in direct assistance to their belligerent compatriots in Europe. How is the matter to be dealt with? The Bill now before Parliament proposes that a black list shall be compiled of traders in neutral countries who, whether of enemy nationality or not, are substantially enemy firms. One of the merits claimed for the measure is the flexibility of the plan. The black list may be supplemented from time to time. In that manner it is intended that interference will not take place in cases where the blow aimed at German trade would react unfavourably on British trade. The Bill is a compromise between the Anglo-American doctrine of domicile and the continental doctrine of nationality. Our Government are not prepared to go so far as the French law for instance, which regards all persons of German nationality, no matter where they reside, as affected by the ban upon intercourse which belligerency imports. We see that the House of Commons welcomes the Bill. We have one word of warning. The Bill is a compromise. Its success will be determined by its administration. If the black list be not compiled with discretion and care and upon intimate knowledge, or if there be vacillation or trifling prejudicing of British shipping or commercial interests, the full measure of success will not be achieved.

"Restraint of Princes."

Considerable importance attaches the effect of the circular which the Director of Transports has addressed to shipowners, in which it is pointed out that the act of requisitioning by the Government constitutes a "restraint of princes" within the term ordinarily included in shipowners' contracts with merchants. The circular deals with third-party claims against shipowners arising out of the requisitioning of their vessels, against which owners are indemnified under the Blue Book terms. It is pointed out that the Government can only be responsible for such third-party claims when they are legally enforceable against the owner and result approximately from the requisition. When a third party prefers a claim against a shipowner the latter should therefore take all reasonable precautions to see that he makes no payment unless he is legally bound to do so. Where, as is usually the case, the shipowner has a clause protecting himself against liability for non-performance or for loss caused through "restraint of princes," and where the performance of the contract is rendered actually impossible by the requisitioning, no claim by the third party for non-performance will ordinarily be enforceable against him, and if the shipowner does make any payment, he will be unable to obtain a refund from the Government.

Requisitions and Time Charters.

Mr. Justice Sankey, in deciding the case of the Modern Transport Company *v.* the Duneric Steamship Company, confessed that it raised points of perplexity and doubt on which the guidance of a higher tribunal might be sought. It concerns the respective rights of owners and time charterers in relation to the steamship *Duneric*, which was requisitioned by the Admiralty. That vessel, belonging to the defendants, was the subject of a time charter dated March 2, 1915, and the rate of hire was fixed at £2,350 per month. The exception clause, which was a mutual one, included such events as perils of the sea and "restraint of princes." On May 21, the *Duneric* was requisitioned by the Admiralty, and none of the limitations of the original time charter were taken over. The Admiralty returned the vessel on November 29 and the rate of hire which it paid was £1,220 14s. per month. The difficulty of harmonising the interests of the owners and the time charterers is evident. The owners claimed to withdraw the vessel on the ground that the hire had not been punctually paid. The New Transport Company, on the other hand, contended that during the period of requisition the owners had to look to the Admiralty for payment and not to them. They claimed an injunction to restrain the owners withdrawing the vessel from their service. Mr. Justice Sankey settled the matter by granting the injunction, but he awarded the owners £8,627 as balance of the hire. The time charterers were entitled to receive the sums falling due from the Admiralty. As the time charterers had taken such risks as we have mentioned it seems fair that the owners should recover on the

agreed rate of hire. On the other hand, the Admiralty was in a position to impose an exceedingly disadvantageous arrangement on the time charterers, with whom it is impossible not to feel sympathy. Their grievance appears to lie entirely at the door of the Admiralty.

Mortgages on Prize Ships.

Last week when the prize steam yacht *Oriental*, of 372 tons, was put up for auction by C. W. Kellock & Co., attention was drawn to a clause providing for the payment of the vessel from which it appears that whereas it has been possible to leave 75 per cent. of the purchase price on mortgage the Admiralty Marshal has altered the borrowing to 25 per cent. and the purchasers will have to provide 75 per cent. of the selling price in cash. This is a complete reversal of the very generous terms offered purchasers at the beginning of the war. The part of the clause referred to reads: "Any part, not exceeding 25 per cent., of the purchase money may be left, in the case of a British buyer, either on mortgage of the vessel or on bankers, or other guarantee approved by the Admiralty Marshal; and in the case of a French or Belgian buyer, on such guarantee as aforesaid. The part so left on mortgage and/or bankers' guarantee shall carry interest at the rate of £5 per cent. per annum from the day of the present sale, payable, in cash, in London, half-yearly on the 1st day of January and the 1st day of July, and such part shall be payable, in cash, in London, at the expiration of one year from the date of the order for delivery of the vessel to the buyer, with liberty for the buyer to pay off earlier if he thinks fit."

Enemy Interests.

Opinion is forming much more quickly than we were sanguine enough to hope on the subject of British companies financed and controlled by enemy aliens. We allude again to the matter this week to record effective progress along the lines we have advocated. The debate on Lord Halsbury's Bill has revealed that the doctrines on which the law on this subject was laid down by the Court of Appeal in the Continental Tyre case are to be judicially tested in the House of Lords. That case has no doubt an indirect bearing on shipping concerns which, although in reality under German ownership have been able by the laxity of our company law to fly the British flag under the protection of the British fleet. Lord Halsbury, Lord Mersey and Lord Wrenbury all laid particular emphasis on the anomaly that it was possible under the Merchant Shipping Act for Germans having been incorporated here to own and sail vessels as British. Those noble lords agreed that the law required immediate amendment. We are agreeably surprised to find the Lord Chancellor, who spoke on behalf of the Government, admitting frankly that it might well be the subject of consideration whether legislation might not be undertaken to deal with the special shipping aspect apart from the wider questions involved in the Continental Tyre case. If this admission be the preliminary to legislative interference, then our views expressed in recent issues are, broadly speaking, not very far removed from those entertained by the Government. We shall watch with patience for the signs that a seriously conceived measure to amend the law has taken shape.

Steering Engine Trouble.

The following remarks apply to all classes of ships in which the steering engine or engines are fitted in the engine rooms, and not in a separate compartment. As is well known under normal conditions in merchant vessels, the ship's speed once fixed is seldom altered unless under unforeseen conditions, or when entering or leaving harbour. In this type of ship should the controlling shafting from the bridge to the engine be fractured or injured, the engine room telegraph on the bridge is used for steering. A strip of paper is pasted on the inner circular section inside the order circle, marked in degrees as on the wheel pedestal. The shafting is disconnected from the steering engine, and the steering orders as stated transmitted to the engine room by the bridge engine room telegraph, the order being passed to a man stationed at the steering engine who moves the engine as required by means of the gear and index fitted. Sudden engine orders could be passed by speaking tube. In ships fitted with a revolution telegraph a better method is adopted. In this case the main engine speed is given by the bridge engine room telegraph in the usual way. On the revolution indicator in the space between the zero and full revolution marks, a strip of paper is pasted, marked as before, and the same procedure adopted, using the bridge revolution telegraph as the medium. The revolution telegraph below is marked in an identical manner. The best plan is to make each revolution of the handle denote a stated number of degrees. Both the above methods have been successfully tried.

Geared Turbines.

In Lloyd's report of the Society's operations for the current year, reference was made to the increasing use of steam turbines, especially of the geared type. By the introduction of gearing it is possible to obtain the high peripheral velocity necessary to obtain economy, and at the same time to use large screw propellers at such speeds of rotation as make them more efficient than smaller propellers run at very high revolutions. Mr. J. Hamilton Gibson recently delivered a paper on the subject to the Liverpool Engineering Society, and we refer to it at greater length on page 533. Mr. Gibson said that he was convinced that the successful application of mechanical gearing to steam turbines is the most important advance in ship propulsion that has been made in recent years. Economy in weight of machinery, in coal consumption and in number of engine-room staff is effected by its application, and there were many reasons given why its adoption should be more universal. The marvellous accuracy which has been attained in the cutting of gearing has probably much to do with the success of recent installations; there is practically no wear of the teeth, no objectionable noise, and a high transmission efficiency has been effected. The success which has attended the adoption of geared turbines in the *Cairnross* and other cargo ships has opened up a huge field to its possible application. Because of the economies effected, the system must soon commend itself to shipowners in general. It is possible the ordinary reciprocating engine requires less careful handling than turbine machinery, but the intelligence of the average engineer is equal to the task of looking properly after a geared turbine installation.

Revolutions and Efficiency.

For any given ship driven at a certain speed there is one size of propeller, and one only, which at a certain number of revolutions per minute will give the best all-round result in efficiency and economy. This axiom was given by Mr. Gibson in his paper on geared turbines, who expressed the opinion that the best propeller for a 30-knot destroyer of 1,000 tons displacement would be about 9½ ft. diam., running at 300 r.p.m.; a tramp of 10,000 tons would be best driven by a propeller 18 ft. diam., revolving at 60 r.p.m. It may be granted that there is one propeller only for any special set of conditions which will give absolutely the maximum efficiency, but there is a wide range of dimension in which the loss of efficiency from the maximum is very slight indeed. For example, the experimental efficiency of the 18-ft. propeller may be about 73 per cent., a propeller 19 ft. in diam. and of smaller pitch would be about 72 per cent., and one 17 ft. in diam. and of greater pitch would also be about 72 per cent. There is thus a possible range in diameter of from 17 to 19 ft. with only 1 per cent. difference in actual screw efficiency. Other considerations enter into the problem, however. A propeller with too great a diameter will probably slow up the engines so that the number of revolutions

for which the machinery was designed will not be reached. On the other hand a smaller propeller may allow the engines to run freely and so attain a few revolutions more than the designed number. In order to obtain absolutely the best propeller an accurate estimate must be made of the power to be delivered to the screw, and of the speed of the following wake. There is room for error in both these computations. It is probably the case that few vessels have absolutely the most suitable screws, but small departures from those of maximum efficiency have little effect on propulsive efficiency.

THE "P. & O."

WHEN Sir Thomas Sutherland retired from the management of the P. & O. last year, after 34 years of strenuous and devoted service to the company, he gave his successors a heritage which Lord Inchcape, at the meeting on Wednesday of last week cordially acknowledged. In his speech, which we publish in full on pages 546-548, Lord Inchcape dwelt interestingly on many points upon which the abbreviated report was silent and his lordship, in detailing the work of the past year threw some sidelights on the rôle of one of our premier shipping companies in discharging its duty to the shareholders, the Government and the public. Notwithstanding the depletion of their fleet by Government requisition to the tune sometimes of 42 steamers out of a fleet of 60, and a shortage of 31 at the present time, so far not a single departure has been cancelled. The record of service to the country shows that 480 of the P. & O. and British India officers and engineers have joined His Majesty's forces, mostly afloat. Sixteen have been wounded, 27 have been killed, and one has gained the V.C. The shortage of vessels generally and the diminished fleet of the P. & O. has naturally caused abnormal running conditions, especially in regard to the demand for space for the carrying of mails, which have so increased in bulk—sometimes 10 times greater—that mails occupying 1,200 to 1,800 tons of space make at the same time inroads on the cargo carrying capacity and consequently prove a source of loss to the company ; but a loss cheerfully borne. No new vessels have been laid down, but the Board have an extensive building programme as soon as conditions approximate more closely to the normal.

A fine tribute was paid to the Admiralty in the following words : "Week after week," Lord Inchcape said, "with unfailing regularity without exception, all through these 16 months of war, the P. & O. mail steamers have started on their voyages from this country to the far ends of the earth with their usual complement of passengers just as in the times of peace. In seeing them leave Tilbury Dock with crowds on deck and handkerchiefs waving, in going up and down Channel with them, as I have frequently done, it has come home to me very closely how enormously we are indebted to the organisation of the Trade Division of the War Staff Department of the Admiralty, to its Chief, Captain Richard Webb, and to the British Navy generally for the protection of our ships. The Admiralty's confidential instructions to the Masters, which naturally I see in confidence, are marvels of thought, conciseness and simplicity, and it is to the strict observance of these by our commanders and to the watchful care of our Navy that our freedom from disaster so far —in a good hour be it spoken—is to be attributed."

The speech, like so many, told of increased working costs and also, as many others, was in optimistic vein, with no fear of what the future might bring forth. In this latter respect we may be told that it differs but little from the utterances of Herren Ballin, Heineken and others. In words this may be true, but in point of execution and occasion there is a wide difference. The Teuton philippics were addressed to shareholders *sans* dividend, *sans* report, *sans* mobile ships—the toothless garrulity of senile decay. The one said what we had done, the other told what Germany's strangled mercantile marine would do if it could, if we would only let it. And that makes all the difference.

AMENDING THE MUNITIONS ACT.

FROM the point of view of the average shipbuilding or engineering employer whose business is "controlled" there are several proposals in the Munitions of War (Amendment) Bill, to which he would, no doubt, in ordinary circumstances take strong exception. The further consideration shown to workmen in respect of discharge certificates, and the increased "protection" afforded to war munitions volunteers take out of his hands, for example, disciplinary powers which it may take him years to recover. Without these powers normal industry will be very difficult—may, indeed, for a time, be impossible. The idea of penal reciprocity which Mr. Lloyd George considered to be over-emphasised in the amendments proposed by the Munitions Trade Union executives is not given conspicuous effect in the Bill. But it is there all the same. If a man may not do this, that or the other thing, corresponding obligations are laid upon the employer without any convincing necessity to do so, but simply in order to please the trade unions. The effect of that must be seriously to affect the discipline necessary in the normal industry for it is bound to give the workmen an exaggerated notion of their importance.

Employers whose places are not "controlled" are already, as many readers are probably aware, affected by Part III of the Act. Section 11 gives the Minister of Munitions power to require certain specified information from "the owner of any establishment in which persons are employed." In the Bill it is proposed to add to the specified information, "the cost of production of the articles produced or dealt with in the establishment, and the cost of the materials used for such production, and the names and addresses of the persons by whom such materials were supplied or who are under contract to supply them." Before the war it would have been regarded as unwarrantable interference with private enterprise to demand such information. It is not an interference for which very much can be said even in these abnormal days. Still, so much of the same kind of thing has already been done under the Defence of the Realm Acts and also under the Munitions Act that employers have come to regard almost anything which is ordered by the State with equanimity. They regret, as we have suggested, the taking away of practically all their disciplinary powers over Labour, but seeing that practically the whole control of establishments provided for in Section 2 of the Munitions Act is now centred in the Ministry of Munitions they are really less disturbed in their minds about it than, say, a year ago, they dreamed they could be.

Their point of view has, of course, been consistently ignored by the framers of these and other pieces of war legislation. But if they were asked about it they would not unlikely say that in the circumstances of the moment it was of no account. The point of view which matters is, in their opinion and in ours, that of the Ministry of Munitions. Mr. Lloyd George and his staff know in what respects the original Act is deficient for their purposes. The alleged deficiencies discovered by the workmen are not necessarily in their opinion real deficiencies. In any case, it would be futile for us to discuss the point. If the Minister deems it to be necessary in order to get the legislation he believes to be essential, officially to "recognise" some of the alleged deficiencies, he is in a sense entitled to do so. His prime duty is to get ships and munitions of war, and if in getting them he knocks industry into a state of topsy-turveyism he is not to be denied a certain right to do so—provided he achieves his main object. He is knocking industry into a state of topsy-turveyism. Whether he will succeed in getting the necessary ships and munitions of war remains to be seen.

The amending Bill as it stands will assuredly strengthen the position of the Ministry of Munitions. The Government's own factories obviously ought to be controlled establishments in full conformity with Part II of the Act. The extension of the scope of the legislation to practically all the industries which are producing, directly or indirectly for the purposes of the war afloat and ashore, has been necessary for some time. The new proposals regarding

discharge certificates, and the power which is sought to be given Tribunals to award compensation to men unreasonably discharged without adequate notice, and costs to defendants in proceedings which are deemed to be vexatious or frivolous, are justifiable if the men are agreeable to accept them in full settlement of their claims. We are not sure that the proposal which seeks to oblige chairmen of Tribunals to consult their assessors before giving decisions is wise, and we are afraid the concession of a right to appeal on questions of law will involve unnecessary delays. But there is not much doubt that the Minister has taken a right course in the interest of his Department in resisting the proposals which were made to him to resuscitate the Local Munitions Committee. Central control has its drawbacks, especially when the undertakings are on the scale of this one, but it is greatly to be preferred to the "autonomy" of Local Munitions Committees.

"Foremen, clerks, typists, draughtsmen, and other persons whose usual occupation consists wholly or mainly in work other than manual labour" are to be "workmen" in the meaning of the Act. With everybody else controlled from Armaments Buildings there does not seem to be any reason why they should not be. For the proposal that the Minister should be empowered to "order" controlled establishments to pay women at the rates ruling in national factories, there is, perhaps, less to be said from the point of view of employers. Still, as we have suggested, that is not a point of view which really matters. In making the concession, Mr. Lloyd George, no doubt, hopes to conciliate the trade unions and, thereby, to secure their co-operation in his gigantic task.

The amending Bill, as it goes into Committee, is, on the whole, calculated to improve the efficiency of the States' munitions industry, and it is sincerely to be hoped that on its emergence no less will be to say for it. Nothing in it or in the original Act is in the least degree likely to be good for the normal industry; still, that is hardly a consideration which will, we imagine, depress the Ministry of Munitions.

GEARED TURBINES.

At the annual meeting of the University of Liverpool Engineering Society, held last week, Mr. J. Hamilton Gibson delivered a lecture on geared turbines, in the course of which he summarised the advantages of geared turbine machinery over the best triple-expansion engines thus:—15 per cent. to 20 per cent. less expenditure of fuel; 10 per cent. to 12 per cent. less weight of machinery; about 25 per cent. less space occupied, with consequently increased dead-weight capacity; and a smaller engine room and stokehold complement.

Mr. Hamilton Gibson pointed out that the idea of gearing as applied to marine engines was not novel. In an old engineering treatise dated 1852 were not only designs, but drawings of actual engines fitted into vessels famous in their day. They were fitted to drive the totally immersed screw propeller which had demonstrated its superiority over the old-fashioned side paddle wheels. The new screw propeller required to be driven three or four times as fast as the old paddle wheel; but it was too big a jump to build an engine that would work three or four times as fast as a paddle engine—the cautious engineers of that time were afraid that such an engine might break itself down by its own momentum to say nothing of the ship's structure being considered far too unstable and fragile to stand any such rapid alternating stresses. And so gearing was introduced, immense wheels and pinions with great teeth of special hard wood, beech or hornbeam, morticed into the rims of the wheels, having their curves carefully shaped and finished by hand. These old gears were marvels of workmanship; but they did not survive for long in the rough and tumble of actual voyaging and the introduction of the direct-driven engine for screw propellers soon rendered them obsolete. Even the best of these old gears made a tremendous racket, and serious breakdowns were not infrequent. No wonder, he said, that many old marine engineers who survived from that period looked upon the re-introduction of gearing, when proposed for turbines, with shuddering apprehension.

There was, however, a fundamental difference between the gearing then and now. Then it was required to gear up from a slow-running engine making at the most 20 or 30 r.p.m. to a propeller revolving 60 to 100 revolutions. Now we gear down from turbines running say 2,000 or 3,000 r.p.m. to propellers running at anything from 500 or 600 revolutions in a fast destroyer down to 60 or 70 in an ordinary tramp steamer. From that point of view, therefore, the problem was easier, for it is always easier and better to gear down than to gear up.

If it were possible to make the wheels and pinions absolutely concentric, he said, to cut the teeth with absolute accuracy, and to fit them together with absolute correctness as regards centres and parallelism, then if properly lubricated the gears will run at all speeds and powers in dead silence. But as such a degree of perfection is unattainable there must always be a slight rumble, and it is the object of the careful machinist and fitter to see that this noise is reduced to a minimum. The earlier gears were admittedly imperfect, and therefore the noise referred to was distinctly in evidence, sometimes rising to a continuous droning note, particularly if the teeth were fitted too close with little or no oil clearance. But machine tool makers have profited by experience, and have now produced a marvellously accurate machine that has cut such gears with remarkable precision. The range of the machine is very great. The big gear wheel for large, slow ocean liners may be as much as 14 ft. in diam., while pinions as small as 4 in. diam. can be cut in the same machine by suitable adjustments. The wheel, by the way, is usually built up with a cast-iron or cast-steel centre having mild steel rims shrunk and pinned on; in these rims the teeth are cut. The pinions are generally made of nickel or chrome steel, and are turned and ground perfectly cylindrical to within a quarter of one thousandth of an inch before cutting the teeth. The greatest credit was due to Muir's, of Manchester, for their success in perfecting this machine. It sometimes takes several days to set a wheel blank dead central on the machine before the cutting of the teeth can be started, and when the wheel is cut and the surface strains in the rim released, it may go out of shape to the extent of two or three thousandths of an inch. If, after the teeth are cut, the wheel is put aside to rest for a day or two, it may partly recover its circular shape and then its true geometrical centre must be found before its journals are finally turned, to ensure that the rim will revolve true. It must also be carefully balanced on knife edges, and weight added or removed to obviate any tendency to whip in its bearings when running at top speed. It would not do to fill the casing with oil and let the gears run as in an oil bath, because this would produce an hydraulic brake effect which would absorb too much power, and the oil would quickly boil and deteriorate. As it is, the oil can be used over and over again, and lasts for months, or even years, without renewal, just like the oil used in the turbine bearings. In fact, the same oil can be, and is, frequently used for both turbines and gearing, although the modern tendency is to have separate systems, so that, if required, lubricants of different qualities and densities can be used. This, however, means duplicate oil pumps, oil tanks, and oil coolers, and, of course, more expense and weight.

When a turbine is connected directly to the propeller shafting, no thrust block is required, as the steam pressing aft on the turbine blades is balanced by the propeller thrust pressing forward. But a geared turbine is not connected direct to the propeller shaft. Its spindle terminates in a claw-coupling which engages a similar claw-coupling on the pinion shaft. The geared turbine must therefore be independently balanced, just like a turbo-dynamo, and this is accomplished in the usual way by balance cylinders all self-contained within the turbine casing. Separate provision is made for the propeller thrust in a geared turbine installation by fitting the usual thrust block secured firmly to the ship's keelsons, and here again engineers found themselves up against a very pretty problem. It

was found that the usual multi-collar thrust-block, although of ample bearing surface, would not do for turbine work. It was all right for reciprocating engines because the fluctuating thrust due to the uneven turning moment allowed the oil to insinuate itself between the thrust surfaces. But the steam turbine had an absolutely even turning moment. The credit for the solution of this difficulty must be given to an engineer, presumably of French extraction, named Michell. Instead of a rigid flat thrust collar all in one piece, he split up his thrust collar into a number of loose sections, each sector being capable of a slight rocking movement, so that it gives way at the leading edge just sufficient to allow the oil to be drawn in and keep the surfaces apart. It was found that the oil film never failed even under enormous loads. Although the white metal was squeezed out like butter, it yet remained quite cool, because the surfaces never got into metallic contact. Consequently the loss due to thrust friction, which amounts to a considerable item in ordinary thrust blocks, was reduced to an infinitesimal amount, being about equal to that of a ball bearing. Moreover, the whole thrust can be taken up on a single collar instead of the 12 or 20 collars hitherto considered necessary for a high-powered job. The speaker saw no reason why this type of thrust block should not be equally successful for reciprocating engines.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by Correspondents.]

PANAMA CANAL TONNAGE MEASUREMENTS.

1, Fenchurch Avenue,
London, E.C.,
December 13.

To the Editor of Shipbuilding and Shipping Record.

In October last we understand the Marine Department of the Board of Trade informed the Chamber of Shipping of the United Kingdom that it understood from a communication received through the Foreign Office that the Panama Canal Authorities in future agreed to accept the net British register tonnage as equivalent to American net tonnage for the purposes of calculating the dues payable by vessels passing through the Canal, and that it would not be necessary therefore for British vessels to be furnished with their United States certificate in addition to their Panama Canal certificate.

In this connection, our friends, Payne & Wardlaw, of Panama, write us as follows:—

"Regarding the proposed alteration of measurement for Canal tonnage referred to by you, this is not, and we do not think ever will be in force.

"The facts are as follows: Shortly after the commencement of the war an Act of Congress allowed foreign ships to be purchased and placed under the American flag. Furthermore, all vessels so placed under the American flag, retained their old tonnage certificates and were not measured again under the United States rules, and their British captains, officers and certificated engineers were allowed to remain in the vessels, under the American flag, and were allowed one year in which to take out American papers and obtain American certificates. Several British ships were affected by this, and of course passed through the Canal, paying dues on their old British net tonnage. This gave rise to the question of why should not all British ships be allowed to do the same thing. The writer saw the authorities on the matter, and they explained that this law covered only such vessels as were specially mentioned in the Act of Congress as having been allowed to be placed under the American flag and did not affect any other vessels as doing so would be discriminating against their own vessels. Further, that the interpretation of the clause touching this point had been misconstrued by many shipowners, and had lead to much misunderstanding, and that a strong fight would be made against any measure which allowed foreign vessels to go through the Canal at a lower rate than their own vessels. In all fairness, we cannot but agree with the authorities on this point. There is no reason for preferential rates being made to British ships. The measure was only made to assist the increase of the United States mercantile marine and to encourage American owners to buy foreign ships. No foreign ship has, so far as we are aware, passed through the Canal paying dues on anything less than her United States net tonnage or on her Canal net tonnage, nor do we think that such a thing is likely to happen.

"The Act of Congress, known as the 'Panama Canal Act' still rules all such matters here, and in that Act it is clearly specified that all mercantile vessels, without distinction, shall pay Canal dues not exceeding $1·35, nor less than $0·75 per ton of their United States net register tonnage. Until that Act of Congress is repealed, there can be no change of any sort. As you know, the rates established by the Panama Canal Authorities of $1·30 and $0·72 per Canal net ton, when loaded and in ballast respectively, are still in force, but can only be levied when they do not contravene the Panama Canal Act mentioned."

This information may tend to clear up any confusion in the minds of owners over this question.

Turner, Davidson & Co., Ltd.

SHIPYARD WORKERS AND RESTRICTION OF DRINKING.

The drastic restrictions which were imposed on the sale of intoxicating liquor in the Clyde area about four months ago, have produced results which are profoundly disappointing to employers of labour and to the members of the Central Board of Control (Liquor Traffic), a body which was set up by the Government to deal with the problem. After making a special inquiry into the condition of affairs on the Clyde, the Board issued an Order which became operative on August 23 last. The principal provision of the Order was that the hours during which intoxicating liquor could be sold were reduced from 12 per day to 5½, while the treating and credit systems were abolished. The almost unanimous opinion of shipbuilders and other large employers of labour was that only the total prohibition of the sale of liquor would meet the case.

It may be assumed that neither the Board nor the employers were prepared to believe that the restrictions would result in an increase in the consumption of intoxicating liquors, but such is the case. From careful inquiries made in various quarters it is learned that in spite of the restriction in hours during which licensed premises are open drinking has increased to a considerable extent, especially in the great shipbuilding, engineering and munitions-making areas in and around Glasgow. It must be remembered, however, that the majority of the workers in these establishments are strictly temperate in their habits, and their devotion to duty in the present national crisis is worthy of all praise. But there is in Glasgow, as in all large industrial centres a certain class of men who will have drink at all costs, and it is those men who are giving trouble on the Clyde at the present time. Notwithstanding the stringent regulations which are in force with regard to the "off" sale of liquor, ways and means are being found for carrying drink into the shipyards and engineering shops, especially by the night and Sunday squads. As it is impossible for a foreman to be constantly standing over a small squad of men who may be employed in an isolated part of the yard or on a vessel in the course of construction, drinking goes on occasionally, even during working hours. The position of affairs is thus giving rise to anxious consideration on the part of those in authority and it is possible that the Board of Control may ultimately have to come round to the view taken by the shipbuilders at the commencement of the war, and that total prohibition may be introduced.

SUPERHEATED STEAM IN MARINE PRACTICE.

In our issue dated December 9 we published part of a paper on "Superheated Steam in Marine Practice," which was read by Mr. Henry B. Oatley at the 23rd General Meeting of the Society of Naval Architects and Marine Engineers held in New York on November 18 and 19. The following is a further abstract from the same paper.

Pyrometers are desirable for measuring the temperature of the steam at various points. It appears, at the present time, common practice to have one pyrometer indicating the temperature of steam at the engine stop valve, also to have other pyrometers at points nearer the superheater for indicating the temperature of the steam where it leaves the superheating apparatus. A pyrometer to register the temperature of steam in the intermediate pressure chest is also frequently applied. Various types of pyrometers which measure these temperatures accurately are available and are reliable instruments; the electric pyrometer, especially, appears to have been developed in a satisfactory manner for marine practice. The information given by the pyrometer is important, and makes it possible to determine:—

1. How far superheat is being carried through the engine.
2. Whether any boiler is being properly or improperly fired.
3. By showing a reduction in steam temperature, gives warning of an impending fall in boiler pressure; in other words, acts as a danger signal as regards pressures.

Auxiliary machinery may be more economically operated when superheated steam is available. Pipes for accomplishing this may be arranged so that the desired amount of superheated steam can be led to the auxiliary steam line, the quantity depending on the kind of machines to be operated, the distance of these machines from the mixing pipe, and the severity of the weather. If auxiliary machinery is fitted for the full degree of superheat obtainable, maximum economies are, of course, possible. If the machines are not arranged for superheated steam, there is still an opportunity of effecting considerable saving by feeding enough high temperature steam into the auxiliary line, to carry practically dry or even slightly superheated steam up to the auxiliary engines. With long pipe lines leading, for instance, to steam winches operating in cold winter weather, the economy in steam which is obtainable will be very readily appreciated. Winches thus provided will use steam instead of a very high proportion of hot water. In fact, the percentage of economy, by using thoroughly dry steam, in auxiliary machinery will be greater than obtained on the main engines. In converting existing vessels to use superheated steam it is probable that the auxiliaries will not be capable of operating with more than a low superheat. New ships now being turned out are, in many cases, being provided with auxiliary machinery capable of operating with a considerable superheat.

The combination of turbine engines and highly superheated steam should meet with much more favourable reception than has been accorded, until recently, to highly superheated steam in reciprocators. This may be attributed to the fact that internal lubrication, piston rings, valve rings, rod packings, filters, &c., do not require consideration, due, of course, to the character of the prime mover. It is understood that a large percentage of the turbine ships now under construction abroad are equipped for superheated steam. There are now building in England eight geared turbine ships ranging from 3,600 to 10,000 shaft horse-power (averaging about 5,500), which are to be equipped with superheaters. It is probable that the degree of superheat used will be from 125 upward. Geared turbine installations with superheated steam are receiving considerable attention in the United States. There are a number of specifications now out which provide for this combination. It is probably true that some designs of turbine may not be able to use as high a degree of superheat as others, due to conditions of design and construction. Thousands of horse-power of turbines in shore installations are operating with moderate and high degrees of superheat, without any trouble.

There can be no question that the earlier difficulties encountered with superheated steam have remained vividly in the minds of a great many marine engineers and some shipowners. It should not, however, be accepted that these difficulties necessarily exist to-day; at least the progressive engineer should inquire as to whether it is now possible for him to make use of highly superheated steam satisfactorily and avoid, without radical change in design, the troubles which were earlier experienced. Marine engineers, like those in other branches of engineering, are not in all cases inclined to take this point of view. Some find it easier to dismiss the subject with the thought that insurmountable difficulties are bound to come up and that it is easier "to let the other fellows do the experimenting." Such a position in this matter is that "any economy will be to the owner's benefit, but any trouble from the apparatus will be to the engineer's discredit." The attitude thus expressed is greatly to be regretted, as it indicates that such a one is inclined to believe that progress has reached its highest point, and that from now on we can expect little in the line of added efficiency and economy. The author of the paper expressed his belief that men holding this point of view are less frequently met with than formerly, and that the superintending engineer of to-day is becoming very open-minded in problems which make for advancement in marine engineering.

INTERIOR DECORATION OF VESSELS.*

The travelling public of to-day demand and are willing to pay for pleasant surroundings and comfort whether by land or sea. True they get it on most of the transoceanic liners, but with the American coastwise steamers, with some notable exceptions, they are not so fortunate. The writer has been on board of some of them where the interior was an eyesore, when a really fine effect could have been made for a very little if any additional cost. The joiner work has to be made to suit the vessel, and it could have just as well been made to follow some good design instead of a riot of meaningless panels, mouldings and pilasters. It seems to be a mistake when a new passenger vessel is to be built if some scheme of decoration is not worked out. There are so many periods of decorative styles so suitable to be selected from for a vessel's interior, most of them not expensive to reproduce, that it seems anything else should be discarded.

In working out a successful design for an interior a great many things should be considered, and care should be exercised not to have the decoration of adjoining public rooms so one will shock the other. All should blend together like one complete thing and yet not be alike. Other things to be considered are: First always meaning; followed by balance of line, light and shade, repetition, variety of surface, choice of material, contrast and harmony of colour and suitability for the trade the vessel is to engage in.

Exquisite form and proportion must be gained by extreme simplicity of beauty of line in the division of a wall surface into a series of panels, borders and mouldings, separated by pilasters, columns and other architectural forms.

Simple designs well proportioned are an attraction in themselves, and an excess of elaboration should be carefully avoided. Mixture of styles do not always secure the best results. Ornaments, if used, should not attract the eye to the exclusion of the background as if it were an entirely separate part, but should be subservient to the general effect.

Furniture, upholstering, draperies, &c., should be carefully selected to harmonise with the style of the room. Too often is this neglected and a truly beautiful room spoiled by unsuitable furnishings. The designer of the decoration, if he knows his profession, can be and

* Abstract of a paper read by Mr. Harry B. Etter, at the 23rd General Meeting of the Society of Naval Architects and Marine Engineers, held in New York, November 18 and 19.

should be consulted in regard to all details, as he can picture in his mind what such things should be as he progresses with his work.

The interior decoration of a vessel is very often unsuited for the climate she is to trade in. The author was once called upon to look over a steamer engaged in tropical service to see what could be done to improve her. He found the smoking room "a Black Hole"—everything dark, gloomy and hot looking. The other public rooms were not much better—mahogany everywhere. Why is it so many shipowners insist on mahogany or oak-panelled walls when we can get so much better results from delicate tints? In the first place hardwood walls kill the furniture; they absorb the artificial light also, for no matter how brilliantly a vessel may be lighted there are always deep shadows and dark corners. Light colours are cheerful; they reflect the artificial light and make a good setting for rich furniture besides. Of course there are cases where light tints would not answer. A smoking room, as we all know, would not do to be decorated like a ball room, yet we need not have it dark and gloomy like the vessel just referred to.

While we do not want dark, hot-looking rooms for tropical climates, but something cool and airy, just the reverse may be said for vessels engaged in the colder regions. Here we want to feel warm and comfortable. A theatre which the author occasionally visits is decorated in light green and French white in stiff Grecian style. For appearance nothing could be more inappropriate. It gives one a chill on a cold night, but might be pleasant on a warm one; however, the house is not open during the summer months.

If a period of decoration is to be adopted we should stick to it not only in line but in colours and material, both woods and woven goods, and not fly off in the middle of it to suit some individual taste. The writer once saw a set of specifications where a certain room was to be panelled in oak in Adams' style, as if such a thing were possible. We can use oak for a great many things, but never in Adams' period, to be correct.

Some of the periods of decoration which are most pleasing and well adapted for ship interiors are Louis Quatorze, Regency, Louis Quinze, Louis Seize, French Empire, Elizabethan, the Georgian periods, Adams, American Colonial, and some others not so well known by those who are not connoisseurs of art. Some of the Italian styles are beautiful and are especially suited for first-class yacht work, as they are fine as to detail, nearly always carved and consequently more costly.

As smoking rooms are generally finished in oak, some of the 16th century English or Flemish styles always look well and make an agreeable change from the lighter and gayer styles employed for a music room or lounge. For outside rooms such as a verandah or enclosed promenade deck, palm room and the like, a garden effect with trellis panels can hardly be improved upon. Stateroom corridors and alcove passages as plain as possible are better than a lot of small panels and fancy mouldings. The best example of stateroom corridor the author ever saw was on the Cunard Line steamer *Aquitania*. Here panels were eliminated entirely. The walls were built of tongued and grooved planks finished smoothly and covered with a light canvas stretched on and painted, with pilasters at doors and corners only. They looked very neat and were doubtless much cheaper to build and keep in good order than panelled walls. Stateroom division bulkheads, if also built this way, would make all four walls alike in the room. Panels never work in well around berths and other numerous stateroom fittings. There are some of the suites on the *Aquitania* where these walls are papered like the rooms of a house and they look very nice, with a mezzo-tint print or other good picture hung here and there. When soiled this can easily be renewed, besides making the room homely and a good setting for the furniture.

The dead white enamelled walls of the average stateroom are too glaring. The walls back of the corridor and alcove bulkheads usually show the back of the panels of the opposite side, and with the division walls of the usual tongued and grooved stuff make all four walls different, and are very unsightly. The flush walls mentioned above would prevent this.

These remarks are merely suggestions. It is not necessary to have English or Flemish renaissance because it is a smoking room or trellis because it is an outside room, &c. There are many varieties to select from, or a good decorator can work up a design that may be original and interesting, yet at the same time mean something.

We do not need to have carving or ornaments to make a thing attractive. To begin with, carving is a dirt collector, and unless one can afford to have it well executed it had better not be attempted. The H. P. Whitney yacht—at the time of writing this paper building at Cramp's—it would be well to mention, is entirely devoid of carving or ornament, everything depending on the simple lines of the panel work which, together with the beauty of the woods used, the hardware, lighting fixtures and furnishings of every kind to correspond, is going to be very much of a success for a vessel of her type. One wonders why in yacht work, when smallness of space usually requires joiner work to be as flat as possible, marquetry is not used more.

It has always been the writer's opinion that the ship look of a passenger vessel should stop upon the entrance to her interior, and be intended to appeal to people used to living on shore.

Proportion is another great consideration. As the deck heights are usually too low for the size of the room, the walls should be designed to deceive this and give the impression of height. This can be greatly improved by keeping the chair rail, if there be one, as low down as possible, thereby making the upper panels the longest and preventing the squatty look. Columns and pilasters should be well proportioned and with caps and bases suitable for the shafts. It costs no more to turn a column shaft to the proper diameter in proportion to the height and to have the proper taper and fluting, than one poorly proportioned. There are a number of books that treat of this subject of which Vignola is considered the best.

Cornices and mouldings should have a defined profile. You often see a jumble of curves and fillets with no particular meaning and cornices too deep or with too much projection or else too little for the lower portion of the wall. Neither should they be too intricate, for, as it often happens, the forecastle hands may have to paint her some time and they are more inclined to finish quickly and leave no "holidays" than to make a careful job, so pile the paint on thick which soon clogs the mouldings and spoil their beauty. The bed mouldings of cornices can be enriched if more elaboration is desired. Egg moulding, dentil courses and the like are rich, pleasing and good taste, and, as they are inverted, do not collect dust. These, however, should be well above the eye line to have a good effect.

Panels should be large and, when made of several ply wood or one of the many kinds of composition, will not warp or crack. Small panels or those running in a brick fashion have a gingerbread look and require more labour to put together, which adds to the cost and lacks appearance.

The shape of the vessel necessarily has to stand, as well as the structure for the most part. But here many of the difficulties caused by the structure could be avoided if those in charge of the structure and decoration would work together and a little flexibility exercised together with a little judicious scheming. Stanchions, girder lines and web frames can almost always be placed to suit architectural requirements without sacrificing the strength of the vessel.

One of the greatest difficulties to a good architectural effect is the crown of the deck. This does not add to the strength of a steel vessel, and, except for the weather deck or a deck affected by freeboard regulations, could be made flat. In fact, the weather deck of the American Line steamers *St. Louis* and *St. Paul* was made flat. This crowning of the decks prevents horizontal lines so important to architecture and spoils many good architectural details if they happen to come off the centre line.

The sheer of the deck can hardly be avoided in most vessels, and,

not being so severe as the crown, does not do so much harm to the design.

The low deck heights, being all out of proportion to the size of the average room, are hard to treat and require resourcefulness unless the public rooms are under the boat deck. The writer had the good fortune, when about to design the interior of the steamers *Great Northern* and *Northern Pacific*, recently built by Wm. Cramp & Sons, to have also worked out the preliminary arrangement of these vessels, and was enabled to form in mind at the same time the scheme of interior decoration which made it much easier to carry to a conclusion than if several persons were engaged at different times for the different parts.

In these vessels the public rooms, except the dining saloon, were all on the promenade deck, and, by following the type set forth by most foreign-built liners of carrying the deck-houses above the level of the boat deck, we had a good proportionate height in comparison to the size of the room. The dining saloon, which was on a lower deck within the hull, was made 10 ft. high by making this the deck height throughout the length of the vessel. This height answered very well, considering that this room was a very large one.

As these vessels were treated throughout, except the smoking room, in the Colonial style, he was enabled to have fanlights over doors and windows, arches and other details so characteristic to this period of design. The lofty appearance of these rooms was greatly improved by placing the chair rails as low as 30 in. above the floor, making the upper panels of good length.

If the deck heights will permit it, a good practice is to hang the ceiling under the beams before mentioned, with large panels and false beams to suit the design of the room. With the hung ceiling it is possible to carry ventilation ducts, pipes, electric wiring, &c., above it and out of sight, to which access can be had where desired by having some of the panels made so that they can be taken down without disturbing the remainder of the work. With a ceiling of this type it can be better treated to suit the period of design chosen for the room, and will also serve better to reflect electric lighting by avoiding the deep shadows between the beams.

Air-ports and deck-house windows by the smallness of the openings usually form a problem hard to treat. The inside sash sometimes employed helps matters a great deal. This method was used in the dining saloon of the *Great Northern* and *Northern Pacific*, the sashes behind the air-ports being glazed in a glass known as satin finish, which broke the outlines of the air-port and gave the effect of large Colonial windows. Of course it has to be admitted that when the sashes have to be opened the good effect is somewhat lost and the draperies have then to make up for it. The promenade deck of these vessels was enclosed for the length of the main public rooms and large house-type windows were used for those rooms. But we are not often so fortunate as on the steamers mentioned, and have to use other schemes. Ports and windows, if worked in pairs, can be treated as a large double window and look better than if spaced singly and equally distanced all around the walls as so often seen.

With the height of large steamers above the water it is possible to employ large metal-framed windows especially designed to suit the interior. This is being done on most of the transatlantic lines with great success when the location is not too much exposed to the elements.

Too much care cannot be taken in working out the staircases. The stairs in most vessels are too steep and winding. Winding stairs only look attractive on a plan. Thwartship flights should be avoided as much as possible, as in descending such flights one has to meet the rolling motion of the vessel.

The proportion of the width of tread to the height of the riser should be carefully worked out. A good rule is to have the sum in inches of one tread and two risers to equal as near as possible to 24 in., the width of the tread taken always without the nosing. A good proportion would be 7 in. for the risers and 10 in. for the tread. While a less angle of incline would perhaps give a grand appearance, in no case should the tread be more than 12 in. wide or the risers less than 6 in. high.

As the staircase in most vessels is generally a principal feature, care should be taken to have it of a good design with balusters or grille railing corresponding to the design of the surrounding joiner work.

Built-in seats for public rooms are abominable. They are generally uncomfortable to sit upon by not having the proper arm rests and should be done away with where comfort is desired, and chairs of the lounging type substituted. Then, too, in case of damage it is cheaper to renew a chair than a long cushion seat. Chairs and settees corresponding to the style of the room also add to the fine effect.

Painting for period design always looks much better flat finish or at the most a slight egg-shell gloss. Very glossy surfaces throw off glints of high light that is very trying to the eyes. Too many colours should be avoided. The different shades of a colour show the better taste.

As artificial lighting has more than ever become a strong decorative feature since the advent of electric lighting, a few remarks made here would not be out of place. Soft lighting effects are the cry of the present age and the light bulbs if covered with globes of the many artistic designs manufactured (keeping in mind, of course, the style of the room) will produce this effect. As a vessel's saloons are rarely high enough to successfully have indirect lighting, the wall bracket can be used to a great advantage. The wall brackets, properly designed, have a rich effect and work in well with most architectural designs and are not hidden behind beams and girders, producing shadows like ceiling lights would, that is, when the ceiling is not hung or made flush.

When ornamental glass panels are fitted at the ceiling level of skylights or in dome skylights, the lighting of the room is always greatly improved if lights are fitted behind them. Otherwise the skylight makes a black patch at night and puts the whole middle of the room in shadow. The writer believes that the light should come from the same direction by night as by day.

REQUISITIONING FOREIGN VESSELS BY ITALY.

The *London Gazette* of December 7 contained a translation of a decree issued by the Italian Government empowering the Italian authorities to requisition merchant ships and yachts flying a foreign flag, and boats and floating craft of foreign ownership, lying in the harbours and territorial waters of Italy and its colonies, subject to the conditions laid down in the following articles, viz.:

(1) Payment in compensation for requisitioning will be made in monthly instalments, not paid in advance, to the interested persons or their legal representatives. The Government have power, however, to suspend payment if special circumstances arise rendering such a course advisable.

(2) The requisitioned vessels which come under the terms of the present Decree will be temporarily inscribed in a special register at the Marine Department of Genoa, and will be authorised to fly the Italian flag in virtue of a special temporary permit.

The High Freights.—In the House of Commons last week Sir Edwin Cornwall asked the President of the Board of Trade whether he was aware that freight for coal from this country for Genoa had reached as much as 60s. per ton, and freight from Newcastle to London as much as 16s. per ton, and that these charges were primarily due to conditions and want of organisation in the shipping industry. Mr. Runciman, replying, said that the whole question of shipping freights was being carefully watched. The governing factor in these problems was the pronounced and serious shortage of tonnage for this and every other trade. No interned vessels were used entirely in the home coasting trade, and in no case had the same freight been paid on interned vessels as upon vessels chartered in the open market. While rates on interned vessels had been raised from 8s. to 12s., outside rates had risen from 9s. to 13s.

VARIATION OF FRICTIONAL RESISTANCE OF SHIPS WITH CONDITION OF WETTED SURFACE.*

Considering that frictional resistance is the most important element in the resistance of practically all ships, it is noteworthy that investigations of conditions affecting it have been relatively few. Although there have been many attempts made to reduce this resistance by different methods and there are many references made to its increase from fouling, there appear to be relatively little actual data as to the quantitative variations obtained.

The results here given are based on a series of tests made at the United States Experimental Model Basin during a period extending somewhat over a year. The investigation was begun by Chief Constructor D. W. Taylor, United States Navy, before he gave up the immediate direction of the model basin work as a result of his appointment as Chief of the Bureau of Construction and Repair in the Navy Department. The writer therefore thanks him for permission to use the data given in the present paper.

The coefficients of friction for different kinds of ordinary surfaces, and for variation in length of surface, were determined, as is well known, in experiments made by William Froude years ago, and subsequently confirmed by other experimenters. These are the coefficients used in estimating the frictional resistance of a new ship with clean, well painted bottom. When, however, the condition of the bottom changes, the resistance changes, and the extent of this change is a matter of prime interest.

In considering this general subject, two queries naturally arise : (1) On actual ships, what is the increase in resistance due to fouling ; (2) Is it possible to reduce the frictional resistance by modifications in the condition of the frictional surface, or by the application of materials which would tend to make the surface smoother ?

Effect of Fouling.

The method adopted to investigate this subject was to expose to fouling in sea water twelve 10-lb. steel plates 2 ft. wide by 10 ft. long, painted with two coats of anti-corrosive paint. The plates were placed in the water July 10, 1914, at a point in the Chesapeake Bay near the Navy Yard, Norfolk, Va., where the water ordinarily has a density of 1·02 ; that is, contains about 75 per cent. as much salt as is ordinarily found in sea water.

The plates were removed from the water at intervals of one month, carefully packed so as not to remove any of the fouling, which consisted mostly of small barnacles, and shipped to the model basin, where they were tested to obtain the frictional resistance.

Each plate as received at the model basin was tested at speeds ranging from 1½ knots to 8 or 9 knots. After this the plate was carefully cleaned, scraped and repainted with a coat of Norfolk anti-fouling paint and re-tested at the same range of speeds as when fouled, and the coefficient and exponent for the clean condition

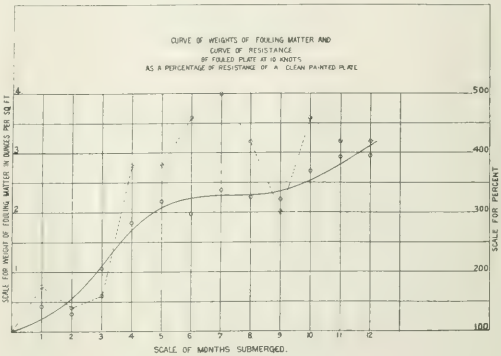

CURVE OF WEIGHTS OF FOULING MATTER AND
CURVE OF RESISTANCE
OF FOULED PLATE AT 10 KNOTS
AS A PERCENTAGE OF RESISTANCE OF A CLEAN PAINTED PLATE
SCALE FOR WEIGHT OF FOULING MATTER IN OUNCES PER SQ FT
SCALE FOR PERCENT
SCALE OF MONTHS SUBMERGED.

Diagram Showing Resistance of the Fouled Plate.

determined. The fouling matter removed from the plates was weighed so as to give a measure of the amount of fouling.

On the accompanying diagram is shown the resistance of the fouled plate at 10 knots as a percentage of the resistance of the same plate when cleaned and painted. These resistances are plotted on the time during which the plate has been exposed to fouling.

In Table I below the data obtained at different speeds are given in tabular form.

It will be seen that the maximum increase is such that the resistance when foul is four times as great as when the plate is clean and freshly painted.

Referring to Table I it will be seen that not only does the coefficient of friction increase greatly but that the exponent in the formula, $R = S/V^n$ also increases and has a value averaging about 2 as compared with the value of about 1·88 for the clean plates.

These results indicate the importance of keeping a vessel's bottom clean and well painted, though it is not considered that the relative

* Abstract of a paper read by Naval Constructor William McEntee, U.S. Navy, Member, at the 23rd General Meeting of the Society of Naval Architects and Marine Engineers, held in New York, November 18 and 19.

Table I.

Table showing Increase in Resistances of Plates when Foul as Compared with the Same Plates Cleaned and Freshly Painted.

Months in water. Speed knots.	Increase in resistance in lb.											
	1	2	3	4	5	6	7	8	9	10	11	12
2	0·24	0·40	1·17	2·09	2·50	2·52	2·80	2·76	2·61	2·97	3·09	3·36
3	0·72	0·88	2·83	4·94	5·79	5·72	6·42	6·31	6·17	6·93	7·28	7·78
4	1·48	1·56	5·19	9·09	10·53	10·22	11·79	11·38	11·02	12·75	13·39	14·20
5	2·55	2·45	8·41	14·59	16·71	16·08	18·55	18·03	17·32	20·30	21·40	22·50
6	4·02	3·51	12·42	21·40	24·32	23·20	27·20	26·16	25·13	29·83	32·43	33·07
7	6·77	4·74	17·35	29·80	33·45	31·70	37·00	35·95	34·23	41·15	43·4	44·65
8	7·82	6·20	22·90	—	44·20	41·80	48·65	47·50	44·80	54·50	56·8	60·10
9	10·40	7·75	29·40	—	56·35	52·85	—	—	56·95	69·85	—	—
10	—	—	—	—	—	—	—	—	—	—	—	—
Coef. foul plate	·01138	·01282	·01667	·0239	·0255	·0252	·02745	·02666	·0275	·0285	·0273	2·029
Exp. foul plate	1·994	1·928	2·029	2·002	2·003	1·988	2·000	2·001	1·967	2·015	2·055	2·035
Coef. painted plate	·01071	·01004	·01060	·01189	·0108	·0095	·0108	·01013	·01075	·00903	·0096	·0095
Exp. painted plate	1·869	1·918	1·937	1·855	1·874	1·938	1·880	1·912	1·869	1·848	1·914	1·924

Coef. = Coefficient. Exp. = Exponent in formula $R = S/V^n$.

effect on a ship's resistance due to an equal amount of fouling would actually be as great as that obtained in these experiments, as it seems probable that the decrease in frictional coefficient due to increase of length would be relatively greater for the foul condition than is found to be the case for clean, smooth surfaces.

Effect of Lubrication.

At various times attempts have been made to reduce the frictional resistance of ships by lubricating the under-water surface or by polishing it to a high degree of polish with various materials. One favoured method used for racing yachts is to polish the bottom with black lead or graphite. An investigation of the benefits to be expected from such polishing or lubrication has recently been made at the model basin with friction planes. The two planes used were those with which the frictional coefficients of several ship bottom paints were determined a few years ago. These planes are roughly 20 by 2 ft. by $\frac{3}{4}$ in., with ends sloped forward at an angle of about 30 deg. Total wetted surface for each is about 82 sq. ft.

The planes were sandpapered smooth and coated with shellac, and in this condition were each towed in the water at speeds ranging from 1 to 11 knots.

One plane was next coated with black lead or graphite, which was mixed in sour milk and applied with a brush to the shellacked surface of the plane. When dry, the lead was rubbed down to a fine, smooth polish. Ten runs were made with this plane at speeds from 5·1 to 6·5 knots. The graphite seemed to cling well to the surface and showed no abrasion or wear. When wet, however, it was easily rubbed off.

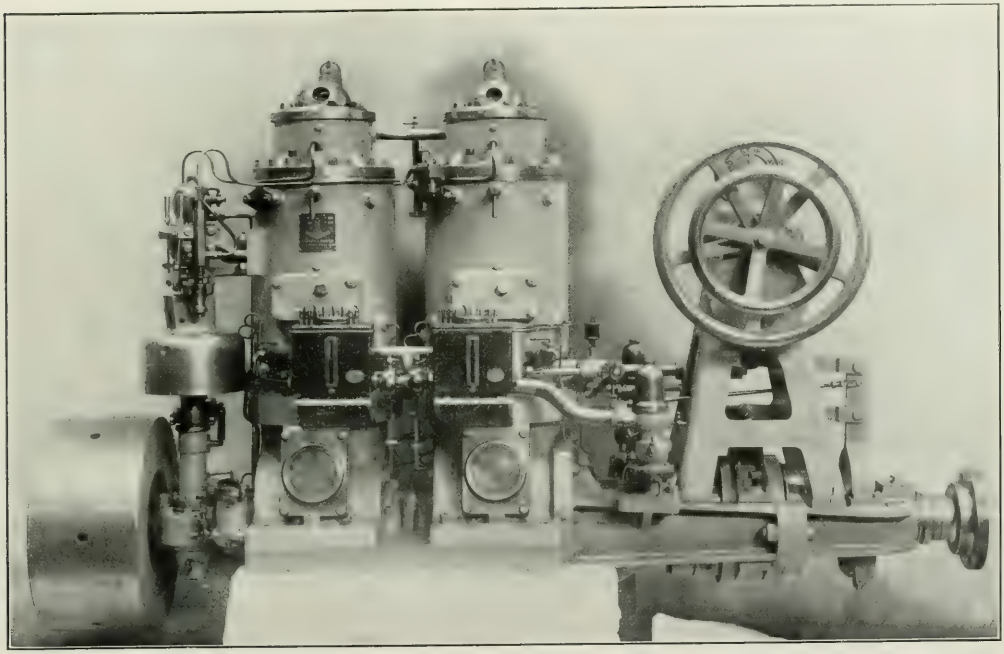
The next material tried was ordinary ivory soap, which was mixed as a thick emulsion in water and applied with a brush. The plane was run at speeds from 6 to 9 knots. The soap left a whitish streak in the water the first run, but not thereafter. The resistances obtained on all of the runs were consistent, so that the quality of the surface was probably unchanged during the course of the experiments.

Two other lubricating materials experimented with were heavy cylinder oil and light cylinder oil. The oil was applied to the shellacked surface of the plane when dry with a brush, the plane being suspended over the position in which it was attached to the towing carriage, so that it could be run in the water as quickly as possible after the application of the oil. The plane with the heavy engine oil was run at speeds from 6 to $8\frac{1}{2}$ knots. The observations obtained were consistent, but the slope of the resistance line when plotted on log paper indicated that at speeds of about 3 knots the frictional resistance would fall below that of the smooth, shellacked surface. This peculiarity is possibly due to the fact that parts of the oil formed in drops or globules and wavelets, increasing as the speed increased, thus changing the condition of the surface which might, if tested at lower speeds, not have given results lower than shellac.

The experiments with the light engine oil indicated that for the first two runs the resistance was a small percentage greater than for the shellacked surface. Apparently as the oil was washed off the resistance decreased until the resistance agreed with that previously obtained with shellac.

The results of the experiments indicate that no advantage over a smooth varnish or shellacked surface is obtainable with the materials used. For each lubricating surface the resistance is greater than for the shellacked surface. The resistance increases in the following order: Black lead, light engine oil, ivory soap, heavy cylinder oil.

The lubricating surfaces were tried only over a limited range of speeds, from 6 to 9 knots, as it was thought that the exponent in the formula $R = S/V^n$ could not be used, owing to the changing condition of the surface due to the washing off of the lubricating



70 h.p. M.P. Type British Kromhout Marine Oil Engine. (*See page* 540.)

material. Actually it was found, however, that the light engine oil was the only material for which the resistance changed rapidly, and that washed off quickly so that the resistance came down to that for shellac.

In Table II is given a tabular comparison of the results :—

Table II.

Surface.	Plane.	Area, Sq. ft.	Coef. of friction.	Exponent.	Net resistance at 7 knots in lb.	Percentage increase in resistance at 7 knots.
Shellac...	AB	82·12	·00878	1·883	28·1	--
Shellac...	CD	82·20	·00849	1·886	27·4	
Black lead	CD	82·20	·00866	1·886	27·9	2
Light engine oil ...	AB	82·12	—	—	28·3	5*
Ivory soap	AB	82·12	·01045	1·898	34·5	23
Heavy cylinder oil ...	CD	82·20	·001818	2·38†	10·5	18

* At 6 knots.

† This low coefficient of resistance is combined with a high velocity exponent and probably would become greater at speeds lower than those at which experiments were made.

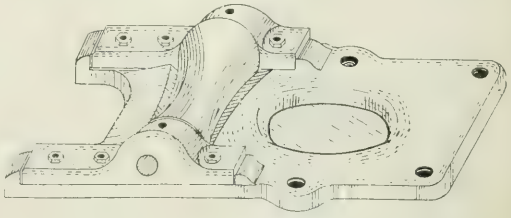
IRON BARGES ON THE VOLGA.

Iron boat construction on the Volga is a development of quite recent times, although the first experiments in this type of boat building took place over thirty years ago. In the year 1880, Nobel Bros., the "petroleum kings," built the first iron tank barge, 34 sazhens long (238 ft.), 12 arshins broad (28 ft.) and of very shallow draught, capable of carrying 37,000 poods (600 tons). However, the appearance of this barge did not lead to the development of iron boat construction. Petroleum products, including kerosene, were carried in wooden boats of the ordinary type under grain, which were first used by the well-known boat-owner, G. I. Chernoff. The transport of kerosene belonging to Nobel Bros. used to be done by N. V. Cherkassoff, who conveyed the petroleum in very small boats of 50 poods or more. But as kerosene, thanks to its light specific gravity, lay higher than the level of the water during a long journey it rapidly lost weight. Whereas the loss of mazout was called (from Astrachan to Nizhni) as much as 10 per cent., the loss on kerosene during the same passage meant as much as 15 per cent. As a matter of fact, kerosene sometimes lost more. In order to reduce the leakage some special measures were taken, which proved to be abortive. This loss of oil on the way was one of the causes that destroyed the House of Cherkassoff, and kerosene began gradually to be carried in iron barges, which usually were made up from the iron hulls of steamers. Of such were the fleet of Alexia Shitoff, but as the movement in kerosene increased, it was found that the type of new iron boat failed to be superior to the ordinary wooden one. A revolution was effected in the construction of iron barges in the *Martha Posednitza*, built by D. V. Sirotkin in 1907 at the Shorin factory in Gorochovetz. It was 72 sazhens long, 30 arshins broad, and carried 550,000 poods. At that time, Nobel Bros. were preparing to build their own iron barge service, for which they issued a special loan of 10,000,000 roubles. The appearance of a giant like the *Martha Posednitza*, on the Volga, impressed the brothers Nobel, and one of their representatives did the journey in the *Martha Posednitza*. The result of his observations was to be seen in that 10 boats of this type of vessel were ordered. This was the real beginning of the construction of iron barges, which has continued to the present day, on the Volga. The Government was ready to lend money on the construction of such vessels for the encouragement of the industry to the extent of 80 per cent. of the cost of the boats. According to official information, there were 160 iron barges navigating the Volga and tributaries in the navigation season of 1913, the largest owners being Nobels, the Mazout Company, the Eastern Company, and the Volga Co. The total carrying power of the barges on the river in the winter of 1913-14 was about 44,051,000 poods, and calculating that each barge goes to Samara seven times, we may assume that the total Volga fleet may carry 308,357,000 poods of petroleum products in the season. The despatch from Astrachan of crude petroleum, residue, kerosene and lubricating oils for the last ten years is shown in statistics to have fallen from 321,400,000 poods in 1904 to 249,200,000 poods in 1913. This table shows that the despatch of petroleum products from Astrachan is not progressing, and that the number of iron barges available is greater than is required for the goods to be carried. The result is obvious, that the further construction of iron barges, unless the production of petroleum be much increased, must be stayed.

STEAMSHIP APPLIANCES.

HAMILTON'S PATENT DECK FLANGE.

Cable chains when rove through a hawse pipe of the ordinary pattern inflict considerable wear on the pipe especially where such is connected with the shell or the deck plating. This also implies a considerable amount of friction which has to be overcome by the windlass. Hamilton's patent hawse pipe and deck flange manufactured by A. Hamilton & Sons, Ltd., Victoria Foundry, Cardiff, overcomes the disadvantages owing to the presence of steel rollers at each end of the pipe. The accompanying illustration shows the



deck flange from which the general principle of the patent will be seen. Marine superintendents will appreciate the consequent elimination of friction caused by a cable running hard on the ordinary deck flange and as Hamilton's patent means less power and less steam necessary with a corresponding lengthening in the life of the windlass chain and pipe, owners will see that the extra cost of installation will soon repay the outlay. The deck flange may be fitted to existing pipes independently of the patent pipe and even in this case considerable saving is effected. The idea has been adopted on several lines and is giving satisfaction.

BRITISH KROMHOUT ENGINE.

We illustrate on page 539 a 70 h.p. M.P. type British Kromhout marine oil engine which Perman & Co., Ltd., 82-83, Fenchurch Street, London, have just had completed to a special order. The British Kromhout engines are not hot bulb engines nor do they use water injection. A description of this type was given in our issue of November 18 last in an article on the vessels and machinery of the twin-screw motor oil tanker *Hera*.

The Panama Stoppage.—Turner, Davidson & Co., Ltd., 1, Fenchurch Avenue, London, E.C., in confirmation of their last cable advices are advised by cable from their Panama friends, Payne & Wardlaw, that good progress has been made with the removal of the obstruction, and that they consider the prospects of a passage for oversea vessels of moderate draught in second half of January are good, but it is not possible to guarantee this yet. The authorities will not commit themselves to a date.

GENERAL NEWS SECTION.

PERSONAL.

Mr. Gerald F. King Clark, a partner of the firm of Clark & Service, shipowners, Glasgow, and brother of Mr. George Clark, Workman, Clark & Co., Ltd., died at his residence in Paisley on Saturday.

Mr. Hans B. Olsen, a well-known West Hartlepool merchant and shipowner, died on Saturday. The deceased was 71 years of age.

The death has occurred, whilst on business at Dundee, of Mr. Charles M. Lund, Superintendent Engineer for the last five years to the Sutherland Steamship Company, Ltd., Newcastle. Mr. Lund commenced his career at the Central Marine Engine Works.

The death is announced from New York of Mr. Max M. Normann, head of Benham & Boyesen, steamship agents and shipbrokers of that city. He was agent for the Russian–American and the Norwegian–American Lines. He was 59 years old.

Mr. Alfred Henry Houlder, of 25, St. Agnatius Avenue, Croydon, Surrey, of Howard, Houlder & Partners, Ltd., 17, St. Helen's Place, London, E.C., a director of the Hill Steamship Company, Ltd., and the Porhydrometer, Ltd., left £28,459, of which £13,207 is net personalty.

The death occurred on December 6 at his residence at Putney of Mr. John William Robinson, senior partner of Hogg & Robinson, Admiralty shipping agents and brokers at Lloyd's. Mr. Robinson was elected a subscriber in 1875 and some eight years later became a non-underwriting member. The deceased was in his 66th year.

Mr. B. Pardoe Thomas, head of the firm of Pardoe Thomas & Co., Ltd., shipowners, Newport Mon., has decided to contest the Monmouth boroughs at the next Parliamentary elections as an Independent Democratic Business candidate. Mr. Thomas, who is the son of a Welsh Baptist Minister was for 20 years associated with two London shipping concerns.

Captain R. C. McFee, R.N.R., who was one of the best known and most highly respected shipping officials in Glasgow, died last week. Captain McFee, who was in his 68th year, occupied the position of marine superintendent of the Anchor Line, and was in the service of the Line for about 45 years. He was a native of Saltcoats, and he served his apprenticeship in the sailing ships of the City Line.

The death took place on Monday, of Mr. E. S. Scorfield, the Secretary of the Newcastle-on-Tyne Protection and Indemnity Association, and the Newcastle 100 A. Steamship Insurance Association. Mr. Scorfield was at business up to only a few days ago, and although 74 years of age, was then apparently in his usual good health. He took a leading part in the movement which led to the formation of the Tyne protection and indemnity clubs, the first of their kind in this country.

The death took place on December 7 at his residence, 7, Buckingham Terrace, Edinburgh, of Mr. Campbell Gibson, of George Gibson & Co., shipowners, Leith. Mr. Gibson, was born in October, 1865. In 1883 he entered the office of George Gibson & Co., shipowners, Commercial Street, Leith, and subsequently became a partner of that firm, which was founded by his grandfather. For several years he represented the shipowners of the port on Leith Dock Commission, and in November, 1915, he refused to allow himself to be nominated for re-election. He was a member of Leith Chamber of Commerce. He was chairman of the Saturday Fund of the National Lifeboat Institution and later chairman of the Royal National Lifeboat Institution, Edinburgh, Leith and Granton Branch.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Glasgow.

The large motor ship *Bostonian* ran trials on the Clyde last week prior to being put into commission. This vessel has been built at Glasgow by Harland & Wolff for the Leyland Line, but her completion has been considerably delayed by the war. She was launched about 11 months ago. The *Bostonian* is a vessel of 414 ft. in length, 52 ft. in beam, and has a registered tonnage of 6,500 tons gross. She has been fitted with Diesel oil engines by the Burmeister & Wain Company of Glasgow.

Allocation of Berthage at Glasgow.

The question of the allocation of certain berthage at the harbour to individual firms has again come under the consideration of the Clyde Trustees. Donaldson Brothers applied for two additional berths at the South Pier, Prince's Dock, on account of their increased trade and the larger number of vessels which the firm have now sailing in their various services. Donaldson Brothers have already allocated to them the whole of the South Pier except the two berths for which they made application. In view of the pressure on harbour accommodation at the present time, the Trustees were obliged to decline the application. William Baird & Co., also applied for increased facilities for handling their iron ore traffic, and an arrangement has been come to by which this firm will give up their allocated berthage at Queen's Dock, and in substitution therefor they will be given berthage accommodation at Rothesay Dock.

Repair Work Quiet.

There has again been a considerable falling-off in the amount of repair and overhaul work on hand at Glasgow, there being only half a dozen vessels undergoing repairs in the harbour and dry docks at the beginning of the present week. The largest job is that of the *Tuscania*, which is being repaired after having been ashore on the Clyde. The damage to the vessel has proved greater than was at first anticipated and the Clyde Trust has been asked to give the use of one of their dry docks for an extended period. The vessel entered the dock on November 22 and she is expected to leave it about the 15th of the present month. Shipbuilders on the lower reaches of the river have had a number of trawlers undergoing repairs, and at present Caird & Co., and George Brown & Co. have several of these vessels on hand. Work will be commenced shortly on an interesting job which has just come to the river. This is the Russian ice-breaker *Sadkao*, which has come from Alexandrovsk for overhaul.

Proposed New Service from Leith.

At a recent meeting of Leith Dock Commission a letter was read from G. V. Turnbull & Co., requesting that a berth be allotted to them for the use of their American steamers trading to Leith, in order to obviate delays, which have been caused to their vessels by congestion at the port. The firm also state that they have under consideration a proposal for the establishment of a steamer service between Leith, Dundee and New York, and if that service were to be started they would require to have better accommodation at Leith. The Commissioners referred the matter to a Committee for consideration.

THE NORTH-EAST COAST.

(From Our Own Correspondent.)

Newcastle-on-Tyne.

There is very little of real importance which can be added to what was stated in this correspondence last and previous weeks concerning the position and future outlook of commercial tonnage. There can, however, be no doubt whatever but that in the next few months we shall have greater facilities for the building of mercantile ships and some progress should therefore be looked for in the work which has now been in arrears for so long. A word of caution is, however, necessary, lest too much confidence be placed in the near

future. The position will be complicated by the difficulties and the increasing shortage of labour, and also the difficulty in obtaining material from the plate mills, and the delays encountered in the marine engine works many of which are now largely devoted to munition work. Preference will undoubtedly be given to the building of oil tankers, and other special types of tonnage which have a direct bearing on the national situation, and several of these vessels are now in hand both on the Tyne and Tees.

Ship Repairing.

Shipping has been seriously interfered with by the violent weather experienced over the week-end, and the arrivals have suffered somewhat. There is, however, a good deal of work on hand, especially in the lower reaches of the Tyne. At the Mercantile Dry Docks, Jarrow, are the steamers *Broadmayne* and *Springhill*, which latter collided with the Tyne south pier and sustained very bad bow damage.

At North Shields, Smith's Dock Company, Ltd., are completing the repairs to the ss. *Samui*, of Copenhagen, which has now been sold to Mr. Olaf Orvig, of Bergen. They have also finished the repairs to the ss. *Magdala*, of Glasgow, and their No. 8 dock is now occupied by the Prince liner *Egyptian Prince*. The dock of Brigham & Cowan, Ltd., of South Shields is occupied by the ss. *Madura*, of Glasgow, which is likely to be an extensive repair job. At Readhead's docks, South Shields, the latest arrivals are the ss. *Balboa*, of Liverpool, for survey, and the ss. *Lotusmere* and *Inca*. On the Wear, there is but little repair work in hand. At the Wear Commissioners' dry dock the ss. *Rosyth* is in hand, whilst the ss. *Meldon* is at the pontoon of S. P. Austin & Sons, Ltd., for stern repairs.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Liverpool.

The Cunard Company describe as unreliable the report emanating from New York that the Holland-America liner *Statendam* of 32,000 tons, now completing at Belfast by Harland & Wolff, Ltd., may after the war take the place of the *Lusitania* in the Cunard service. Besides, it may be pointed out that the *Statendam's* designed speed of 19 knots, as stated, is altogether unsuitable to work in association with the *Aquitania* and *Mauretania* and to maintain a weekly mail service, out and home, with three vessels, as the Cunard Company have hitherto done.

The *Saxonia's* crew have been entertained by Liverpool merchants for the patriotism they displayed in refusing to work the ship outward to America on November 6 with men of military age on board who were attempting to leave the country. Out of £70 subscribed by the various Exchanges, each member of the crew was presented with an artistic box in red, white and blue, containing a silver-mounted pipe and a pouch filled with tobacco.

The 11 months' traffic returns of Mersey shipping up to December 3 show that reported inwards there was a decrease of 257 ships and 1,293,160 tons of shipping, while cleared outwards there was also a decrease of 42 ships and 1,190,402 tons.

The annual election of the Mersey Docks and Harbour Board held on Monday this week was a purely formal affair, as only the six retiring members were nominated—namely, Messrs. Joseph Utley Hodgson; Richard Durning Holt, M.P.; William Miles Moss; Edward Vivian Rayner; Sir Helenus R. Robertson (Chairman); and Mr. Thomas Rome. The shipowners' nominees were Messrs. Holt, Moss and Rome; Sir Helenus R. Robertson was nominated by the Cotton trade, Mr. Hodgson by the Provision trade, and Mr. Rayner by the General Brokers' Trade Associations. All the retiring members were therefore declared re-elected.

SOUTH WALES NOTES.

(From Our Own Correspondent.)

Cardiff.

Negotiations were, on Friday last, definitely broken off between the Swansea Harbour Trust and the Swansea Corporation with regard to the proposed advance of loans by the Corporation and the Harbour Trust Bill. The Town Council Finance Committee unanimously decided to break off negotiations with the Trust, except so far as the present financial guarantee of £150,000 is concerned. To this the Corporation are already committed by Act of Parliament, and are willing to advance the first instalment of £65,000, if the approval of the Treasury can be obtained. So far the Treasury has refused to sanction the loan and the Corporation have now asked for permission to borrow the money, by way of an overdraft from their bankers.

Coal Licences.

Mr. Arthur Heard, of W. E. Heard & Co., speaking of delay in the granting of coal licences, at a meeting of the Newport Chamber of Commerce last week, said that instead of centralising the granting of licences in London the local Customs or Board of Trade should have a right to grant licences with, of course, the final decision, where necessary, to rest with the London authorities. The coal-owners, he thought, should deposit a bond as a guarantee that the cargo was genuine and going to the port arranged. The requisitioning of ships should also be decentralised, and, if shipowners and brokers were called in, it could be arranged that the Government would have all the vessels they desired in 24 hours. Mr. Felix S. Budd, President of the Chamber, said there was a strong feeling that neutral shipowners should be taxed 10 per cent. or 15 per cent. on their freights, but the matter would require careful consideration, as the neutrals might retaliate on British ships. At present half the cargoes in the Bristol Channel were carried by neutral ships.

Newport's Deep-Water Channel.

At a meeting of the Newport Harbour Board last week it was decided to ask the Corporation to co-operate with the Board in their endeavour to purchase the land in front of the landing stage on the east side of the River Usk. Mr. T. E. Watson, Chairman of the Dredger Committee, reported that the dispute between the Harbour Board and the Alexandra (Newport and South Wales) Docks and Railway Company relative to the deep-water channel had been referred to arbitration. The award was in the form of a special case which left the matter to be decided by a Court of Justice. The Board took steps to put the matter before the Court, but the Dock Company had in the meantime given notice that they were about to deposit a Bill in Parliament amending the Act of 1906. The company had also expressed a desire for an agreement and therefore the special case had been postponed.

Welsh Colliery Deal.

An important colliery deal has been reported. The Ebbw Vale Steel Iron & Coal Co., Ltd., and T. Beynon & Co., Ltd., are stated to have jointly acquired the interests of D. Davis & Sons, Ltd., in John Lancaster & Co., Ltd., the Griffin Nantyglo Steam Coal Collieries. John Lancaster & Co., Ltd., is a private company, formed in 1884 to work the Griffin Nantyglo Collieries at Blaina, in Monmouthshire, which has an annual output of 1,250,000 tons of coal. The share capital authorised is £200,000, but the value of the properties is believed to be much greater than this sum, and the interests held by D. Davis & Sons, Ltd., is about nine-tenths of the whole. The new directorate will be Messrs. J. W. Beynon, J.P., Chairman (chairman of T. Beynon & Co., Ltd.); D. A. Thomas, M.A., D.L. (chairman of the Cambrian Combine Collieries, Ltd.); Frederick Mills, J.P. (managing director of the Ebbw Vale Steel, Iron & Coal Co., Ltd.); and Mr. L. F. Beynon, J.P. (director of T. Beynon & Co., Ltd.).

BELFAST SHIPBUILDING AND SHIPPING.

(From Our Own Correspondent.)

Belfast.

The Christmas holidays in the Belfast yards will be considerably curtailed this year owing to pressure of war work. It is expected that the yards will close down on the 23rd or 24th inst., reopening on either the 29th or 30th inst. A complete cessation of work will be welcomed by the men, many of whom have been going at high pressure for months, and the rest will make for efficiency. Whatever may be the case in other centres there is no sign of any increased activity in mercantile work in the port, contracts of other kinds still absorbing the great bulk of the men. There is a feeling, however, that with the continued losses of good freight vessels through the operations of enemy submarines and the acquisition by Government of new vessels an increased output of mercantile tonnage will be necessary in the national interests ere long. This will not affect Belfast as much as some other centres as the most of the tonnage on order which has been hung up in the local yards is of the passenger liner type rather than purely cargo. In the meantime the pressure on Government work continues as great as ever and between new work and old work the resources of the firms with the existing scarcity of skilled labour are being fully taxed. There will be no further additions to the mercantile output this year and it is not the intention of the local firms to issue any statistical tables of their doings during the year.

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London.

On the whole quietness prevails in most sections of the freight market. The tonnage scarcity is pronounced and consequently a fall in rates in any particular trade is not to be looked for. The United States continues firm, whilst the Plate is steady. In time chartering there is a fair demand for boats and for two years' trans-atlantic business somewhere about 18s. is obtainable. From the Northern Range to Marseilles or Cette 18s. 6d. has been paid for a vessel to give January loading. A vessel has been taken up at 84s. on net form from New York to a French Atlantic port. A record figure has been established in the American coal trade by the fixing of the *Platea*, 4,500 tons, at 52s. 6d. from Virginia to lower Plate ports. From New York or Baltimore to Marseilles for February-March, 18s. has been paid for a 22,000-ton, 10 per cent. steamer. From the Gulf heavy grain business has been closed at 14s. 9d. to the Bristol Channel for a steamer of 27,000 quarters, 10 per cent. She gives January loading, and option of Irish ports at 3d. and London at 6d. extra. Business from Burmah to Liverpool has been concluded at 120s. Bombay to the United Kingdom has secured the *Llandrindod* at the high figure of 95s. She is a 6,000-ton vessel, and gives December-January loading. Sfax charterers offer 40 fr. to French Bay ports, and from La Goulette 23s. 6d. could be again obtained to ports on the East or West Coasts of the United Kingdom. Outward coal rates from the Tyne, although in some instances less than those prevailing a week ago, are still on the whole at a very high level. Recent fixtures include :—Rouen, 26s. Gibraltar, 34s. 6d. ; Bordeaux, 33s. 6d. ; and Genoa, 64s. From Cardiff it is reported that there is increasing strength for Mediterranean ports, although the volume of business transacted is not great. Latest fixtures include :—Lisbon, 31s. ; River Plate, 39s. ; St. Nazaire, 41 fr. ; Treport, 24s. ; and Algiers, 70 fr. Swansea to Rouen has paid 22s. 9d. to the *Seirstad*, 1,350 tons, December loading. Newport to Bordeaux has been closed at 45 fr. to the *General Munthe*. Liverpool to Alexandria has taken up a steamer at 62s. 6d. At Hull the market for outward business is firm and tonnage is scarce, with rates based on 60s. to 62s. 6d. for Genoa and 25s. for Rouen.

Glasgow.

The feature of the Glasgow market has again been the strength of outward coal rates which reached the level of 60s. from Wales to West Italy and 62s. 6d. to Port Said, while other destinations rose to a correspondingly high level. These rates have been paid in spite of the fact that there has been a falling-off in the output of the collieries and a consequent scarcity of the amount of coal for export. The following were among the fixtures reported :—Glasgow to Genoa, Savona or Leghorn, 2,700 tons, 60s., guaranteed terms ; Greenock to Rouen, 700 tons, 27s. 6d., pitch ; Glasgow to Gibraltar, 2,000 tons, 32s. 6d. ; Cardiff to Port Said, 62s. 6d., December ; Glasgow to Rouen, 1,400 tons, 23s. ; Glasgow to Savona or Leghorn, (two steamers) rate reported at 62s. 6d., old charter terms ; Ardrossan to Genoa, 2,600 tons, 60s., option Porto Vecchio, 61s., guaranteed terms. A charter was also reported to have been arranged Bilbao, 2,000 tons, Ardrossan, 19s. The homeward River Plate market was steady at 115s., which was paid for January-February ; and as high as 117s. 6d. was said to have been paid from San Lorenzo, while Bahia Blanca to the United Kingdom was fully steady at 125s., full cargo oats. Rates from America have also been pretty steady, but the amount of business was restricted on account of the licensing regulations. There has been some chartering from Canada to West Italy at 19s. 6d. for heavy grain. In the East rates tended upwards, but little business was reported owing to the scarcity of tonnage.

Newcastle-on-Tyne.

An improved offering of tonnage during the past week has had the effect of augmenting the volume of business transacted on the freight market, but loading turns have become congested, thereby checking an inquiry which would otherwise have been much larger than has actually been the case. The market is very unsettled and irregular, and, whilst rates for some destinations show marked increases on the week, there is something of a slump in values for others. Very little chartering has been done in the coasting trade, but rates have been fully maintained at the level of 16s. 6d. to London, an advance of 6d. on last week's figure. A considerable demand for steamers for the ports of North France has not resulted in any advance in rates, except for Dunkirk, which has recovered last week's slight relapse to the extent of from 6d. to 1s. 6d. Rouen has fallen quickly to 25s., as compared with 27s. 6d. as the prevailing rate last week. Havre is from 1s. to 2s. 6d. down, and Caen 6d. decreased. The Bay is correspondingly lower, and tonnage for Bordeaux has been secured at down to 33s. 6d., a fall of 5s. ; whilst Rochefort at 35s. registers a decline of 4s. The upward course of Mediterranean rates has continued throughout the week, and Genoa is from 6s. 6d. to 7s. 6d. higher ; whilst Porto Ferrajo has been done at 2s. 6d. more. Fixtures arranged since last report include the following :—Boucau, 1,500, 35s. ; Bordeaux, 4,700, 36s. ; 2,150, 33s. 6d. ; Cherbourg, 800, 25s. 6d. ; Caen, 800, 25s. 6d. ; Dunkirk, 500, 33s. ; coke, 1,400, 26s. ; 1,800, 25s. ; Genoa, 1,600, 62s. 6d. ; 2,000, 65s. ; Havre, 1,300, 24s. ; London, 2,400, 16s. 6d. ; Leghorn, 4,000, 62s. 6d. ; Las Palmas, 3,400, 35s. ; 2,400, 34s. ; Marseilles, 3,000, 50s. ; Oran, 2,500, 42s. 6d. ; Porto Ferrajo, 5,000, 60s. ; Rouen, 2,400, 27s. ; 1,600, 25s. 6d. ; 1,500, 25s. ; 550, 35s. ; coke ; Rochefort, 2,500, 35s. ; Savona, 900, 62s. 6d. ; Sicily, 1,800, 62s. 6d. ; Treport, 450, 32s. 6d., coke, two voyages.

Liverpool.

Freights on this market are well maintained both outward and homewards, and where tonnage is in short supply there is the inevitable rise in rates indicated. Obviously under such conditions the amount of business going through is very small. Prompt coal tonnage is still eagerly sought after at full rates and notably to the Mediterranean and to South America. The latter is now paying 39s. from the West Coast, and Genoa is worth 60s., and Marseilles 76 fr. Liverpool to Havre has paid up to 37s. 6d. on d.w., general. Time charters are quiet, but there is a good demand, especially for neutral tonnage, and rates are tending still higher for good class boats. Business homewards is likewise restricted, with rates firm all round. Argentine up-river loading has been done at the high rate of 115s. to the United Kingdom with 110s. from Buenos Ayres or La Plata for January to February North America has gone quiet for grain, but rates from the Range to United Kingdom hold to 13s. 3d., though one fixture is recorded to Bristol Channel at 12s. 9d., January. Rates to Marseilles are indicated at 18s. and 20s. is offering to West Italy. The cotton ports are showing more activity, but business is stifled by tonnage shortage. Form "O" is indicating 300s. to Genoa for good measurement boats, while berth rates are now around $1.80 from Savannah and Charleston, and $2 from New Orleans or Galveston to Liverpool. Australia has again fixed at 95s. to United Kingdom, while 100s. has been conceded to the Mediterranean or Spanish Atlantic, with a third engagement to South Africa at 80s. January to February. Eastern markets generally are firm, Vladivostock indicating 100s. to United Kingdom and Burmah paying 120s. for rice. East Indies have 83s. 9d. to 85s. from Bombay and 72s. 6d. from Karachi as representative values. Mediterranean homewards just now has a brisk demand for tonnage, Alexandria being worth 42s. 6d. to 45s., while ore ports are strong. Huelva to Garston has paid 18s. and Tripoli Barbary to Garston 40s., esparto. Nitrate ports quote 110s. and North Pacific 150s. to United Kingdom. Sail freights outwards are still dull, but homewards very firm in all trades, and higher rates held for.

Cardiff and Swansea.

Conditions have not shown any important alteration since our last report. Scarcity of tonnage supplies continues the predominant feature and rates for all directions have been easily upheld, and in many instances substantially advanced. Inquiries were circulating on a fair scale for most destinations and with charterers anxious to cover their requirements before the Christmas holidays, owners with suitable boats were able to command new record rates up to 70 fr. being conceded for Algiers, 45 fr. Bordeaux, 22s. 6d. Dieppe, 76 fr. Marseilles, 41 fr. Nantes, 67s. 6d. Alexandria, 62s. 6d. Genoa (with options), 62s. 6d. Port Said and 31s. 6d. Lisbon. Despite the shortage of tonnage chartering was moderately active, vessels to carry 183,850 tons being fixed to load at Cardiff or Newport, or 26,350 tons more than in the preceding week. Mediterranean rates were particularly strong on an urgent demand, Barcelona fixing at 39s. 9d. ; Gibraltar, 32s. 6d. (twice) and 33s. ; Marseilles, 70 fr., 75 fr. (twice), 76 fr. (twice) and 73 fr. ; Naples or Torre Annunziata, 57s. 6d. ; Naples or Leghorn, 55s. and 60s. 6d. ; Nice, 75 fr. ; Port Said, 60s. and 62s. 6d. ; and Seville, 34s. Bay and Coasting business was fairly active at firmly upheld figures, Bordeaux paying 44 fr. (four), 43 fr., 42 fr., 43½ fr., 44½ fr. (three) and 45 fr. (five) ; Havre, 21s. ; Rouen, 22s. 6d. (twice) and 23s. and St. Nazaire, 41 fr. The South American section was quiet but steady at Buenos Ayres, 39s. (twice) ; Monte Video, 38s. (twice) ; and

River Plate, 39s. (twice); while the Canary Islands was represented by Las Palmas at 33s., and West Africa was confined to Dakar at 35s. Vessels to carry 11,800 tons were fixed to load at Swansea or Port Talbot, or 18,300 tons more than in the previous week. Rates, owing to the scarcity of tonnage, were easily maintained, Bayonne fixing at 44 fr.; Caen, 22s. 6d.; Dieppe, 23s. (twice); Nantes, 40 fr.; and Rouen, 22s. 9d.

Hull.

The market continues very firm and tonnage is very scarce with rates based on 60s. to 62s. 6d. for Genoa or Savona, from Hull and 62s. 6d. for Alexandria from Hull. To South America 40s. quotes for Buenos Ayres from Hull, but business is quiet. In the Scandinavian trade the lack of licences continues to restrict business. In the coasting branch rates are based on 14s. for London from Hull, 14s. 6d. to 15s. 6d., according to size, for London from Goole, 25s. for Rouen against 26s. 6d. paid recently and 24s. for Honfleur, Dieppe, Havre or Fecamp from Hull. Chartering is quiet to English Channel ports.

THE COAL MARKETS.

(From Our Own Correspondent.)

A factor of importance in connection with the coal trade of this country has been the recent improvement in the volume of tonnage available for outward loading. On the Tyne the augmentation of ships for coal loading has resulted in a fall in freights in the near trades, such as the French Channel and Bay ports. In some instances freight rates have receded well over 2s. per ton. The Mediterranean, however, still holds to record rates of freight.

Another factor which has operated to facilitate Tyneside business has been the desire on the part of merchants to secure boats in order to complete their orders for December. There is a general tendency to hustle things along before the Christmas holiday period is reached. Supplies of coal for December loading are each day becoming scarcer, and considerable difficulty is experienced in securing parcels of prompt coal of certain classes. For best Blyth steams 24s. is quoted, although there is no coal to be had for prompt loading. Tyne primes have touched the higher figure of 21s., the quotation for best seconds being about 18s. There is dullness in the smalls section, although the market is, if anything, a little steadier at about 12s. 9d. for Tyne bests and 10s. for seconds.

A brighter tone characterised the Cardiff coal market at the opening of the week, due, in measure, to the expectation of brisk business from now onwards to the end of the year. The anticipation is that a fair volume of tonnage will come to hand during the next week or so. On the whole the tone of the market is firmer even for prompt shipment. There is undoubtedly greater strength in the forward position, although purchasers do not appear to be in any undue hurry to place orders. There is a strong market for best Admiralties, Monmouthshires, leading smalls and drys. If the tonnage supply is further improved it will probably do away with irregularity in work at the pits. Coal values on Monday were nominally unaltered for large descriptions, but concessions could doubtless be secured by purchasers having vessels ready for spot loading. Pitwood appears to be on the scarce side. Approximate quotations are:—Second Cardiff large steam, 22s. 6d. to 23s.; ordinary large steam, 21s. 6d. to 22s. 6d.; best drys, 25s. to 26s.; ordinary drys, 22s. to 24s.; Western Valleys, 21s. 6d. to 22s.; best Eastern Valleys, 21s. 6d. to 22s.; and Eastern Valleys (other grades), 21s. to 21s. 6d.

In the Scottish coal market high prices have prevailed. There has been a shortage of supplies, with the result that new contracts could only be negotiated for rather remote dates of delivery. Apparently the trouble which the Scottish colliery proprietors have been faced with has been a shortage of railway trucks. Named ells have been firmly held, up to 20s. being paid about the middle of last week. In sympathy with these, secondary coals have advanced in value. Fortunately there has been an improvement in the supply of tonnage. The general demand has been distinctly good; indeed, the demand, probably, has been greater than could comfortably be dealt with. For Navigations and steams there was a strong request with, of course, the result that prices tended to advance. In the Fifeshire section the market was distinctly strong in tone, there being a good inquiry for first-class steams. Prices generally have ruled firm. In the Lothian section a good brisk business has been put through. It is reported that there are full bookings for all grades of Fifeshire coal and it is difficult—almost impossible—to carry out arrangements for supplies for shipment this month. Representative quotations for West of Scotland coals are:—Best ell, 20s. 6d. to 21s.; ordinary ell, 19s. 6d. to 20s.; best splint, 24s. 6d. to 26s.; ordinary splint, 19s. 9d. to 22s.; Fifeshire prices include the following:—Screened navigation, 24s. to 25s.; unscreened navigation, 22s. to 23s.; steam (first-class), 21s. to 22s.; steam (third-class), 15s. to 15s. 6d. Representative Lothian values include:—Best steams, 20s. to 21s.; ordinary steams, 18s. to 19s.

The recent spell of cold weather brought with it renewed activity in regard to house coal on the London Coal Exchange. At the beginning of the week supplies were reported as being exceedingly scarce, and the small quantities which were available were held chiefly for buyers having running accounts. Merchants have been exerting pressure to secure prompt deliveries of the coals on order. It would appear that in some instances coals in wagons have been lost—at all events, delayed—between the pit and the depôt. In seaborne house coal there has been a brisk inquiry. On Monday no seaborne supplies were forthcoming. There has been a deamnd for steams, but the supply of these has been short.

According to advices from Genoa the coal market of that port is approaching a critical condition, and the fear is expressed that Northern Italy may experience a lack of supplies unless some prompt action is taken to remedy the troubles. The small volume of business that is being negotiated is in connection chiefly with coals in port or coals now on their way out. For Cardiff coals in port or on passage 90s. to 92s. is the ruling value, but it is reported that as high as 95s. has been conceded. Prices for anthracite are distinctly firm, but the inquiry apparently is not very pronounced, the actual business put through being confined to supplies now on passage. These have changed hands at 88s. and 89s. There is a marked demand for Newcastle gas coal and for this 87s. and 88s. is the value. The Italian Government is said to be in the market for 280,000 tons of foundry coke.

A well-known figure in the South Wales coal industry has been removed by the death of Mr. W. H. James, Commercial Manager and Secretary of the Lewis Merthyr Consolidated Collieries, Ltd. Mr. James became accountant to the Lewis Merthyr Collieries about 35 years ago. In 1890 he was appointed joint sales agent with the late Mr. R. Hooper, J.P. When the latter gentleman retired, Mr. James took over the duties of secretary and commercial manager to the undertaking.

COMPANY REGISTRATIONS.

James Rogerson & Sons, Ltd.—Capital, £8,000, in £1 shares. Objects, to take over the business carried on by J. Rogerson, of 30 and 32, Brasenose Road, Bootle, and to carry on the business of ship repairers. Private company.

Rodney Steamship Company, Ltd.—Capital, £25,000, in £10 shares. Objects, to take over the ss. *Alice Marie*, and to carry on the business of shipowners and builders, and to adopt an agreement with R. S. Gardiner, 39, Lombard Street, E.C., who is permanent managing director, with £1,000 per annum as remuneration, free of income-tax. Private company.

Seriphos Steamship, Ltd.—Capital, £10,000 in £1 shares. Objects, to carry on the business of shipowners, ship and insurance brokers, managers of shipping property, &c. Signatories (who appoint 1st directors): L. W. Howard, 7, Pretoria Road, White Hart Lane, Tottenham, N. and F. K. Robertson, 151, Ferme Park Road, Crouch End, N. Private company.

Western Valleys Steamship Company, Ltd.—Capital, £15,000 in £1 shares. Objects, to acquire and work the ss. *Hartburn*, of Swansea, and to carry on the business of steamship owners. Permanent managing directors:—R. Hughes Loane, Carclew, Church Road, Whitechurch, Glamorganshire, and J. R. L. Williams, "Rhydyronen," Kimberley Road, Cardiff. Private company.

Worland's Wharf, Ltd.—Capital, £2,000 (1,500 6 per cent. cumulative preference and 300 ordinary shares of £1 each and 4,000 ordinary shares of 1s. each). Objects, to take over the business of wharfingers and warehousemen carried on at Worland's Wharf, West Ham, as "Howell and Jacques." First directors: Ferdinand August Zimmermann, 3, Lloyd's Avenue, E.C.; Wilfred S. Howell, 35, Earlsfield Road, Wandsworth Common, S.W.; and James E. H. Zimmermann, Colonia, Bromley, Kent. Private company.

NEWS PARAGRAPHS.

Shipping Losses.—Lloyd's Register returns show that during the quarter ended June 30, 317 vessels, of 434,269 tons, were lost through stranding, abandonment at sea, foundering, collision or other causes. War losses accounted for 212 vessels, of 320,604 tons.

Austrian Lloyd.—An extraordinary general meeting of the Austrian Lloyd has approved suspension or reduction in the depreciation allowance on ships placed out of service by the war. Official consent had already been given to this proposal. Rules concerning the insurance of ships have also been considerably relaxed.

Elbe Traffic Stopped by Ice.—According to reports received, hard weather during the last week of November caused unusually early appearance of ice drifts on the Elbe. Smaller shipping was first held up on the upper Elbe, but a few days later the obstructions became more serious and affected also the lower Elbe. Ice breakers are at work.

New American Battleships.—A Reuter message states that Mr. Daniels, Secretary for the U.S. Navy, announces that two new battleships are to be constructed in New York, at the Mare Island Navy Yard. Bids from private concerns, he states, exceed the limits fixed by Congress. The offers of the various firms were published in *Shipbuilding and Shipping Record*, December 9, p. 524.

Indo-China Steam Navigation Co.—An extraordinary meeting was held at the Cannon Street Hotel, London, on Monday to empower the directors to transfer the head office from London to Hong Kong. The articles of association are to be altered to enable the directors to keep the books and accounts at Hong Kong, and they are to be under no obligation to remit the same to England for consideration and approval.

Recruiting at Lloyd's.—Nowhere in the City has a better response been made to Lord Derby's appeal than at Lloyd's and from the Marine Insurance Companies. C. E. Heath & Co. Ltd., placed rooms in their offices at the Recruiting Staff's service, and daily large numbers of men have been enrolled under the Group system as well as a fair number for immediate service. The scene on Friday night was extraordinary. News had got round that the attesting officer had lost his voice, and all who had appointments with him for a later hour than six, hurried to see what could be done. None was disappointed though towards the end of the proceedings the oath was read to the recruits in a voice scarcely above a whisper and medical examination was dispensed with. What will the next move be? It is obvious that all who attested cannot be spared. The majority of our active brokers are under 40, whilst many of them are single. Underwriters, though themselves generally of mature age rely greatly on their deputies, many of whom are young men, and unless the Tribunals see their way to respect the claims of these employers chaos indeed will reign in the marine insurance market. As for the business being one of national importance there can be no doubt at all. The mercantile marine could not exist in its present state had owners to run their own risks.

COMPANY REPORTS AND DIVIDENDS.

Illawarra and South Coast Steam Navigation Company, Ltd.—Dividend of 7½ per cent. per annum.

Dundee, Perth and London Shipping Company, Ltd.—Interim dividend of 5 per cent., less tax, as last year.

British Steamship Investment Trust.—Interim dividend of 10 per cent. on the deferred stock, less tax, compared with 3 per cent. a year ago.

Whitby Steamers.—The steamer *Goathland*, managed by Mr. W. A. Headlam, Whitby, has paid a dividend of £30 per one-sixty-fourth share, the Glenbridge Steamship Company £2 per share, and the Glenesk Steamship Company £2 10s. per share.

A.G. "Weser" Schiffswerft u. Maschinenfabrik, Bremen.—This company paid no dividend in 1912 or 1913 and, according to an advance report, will pay none for 1914 either. Good results are expected during 1915, thanks to considerable naval orders.

British India Steam Navigation Company, Ltd.—The report for the year ended September 30 last states that after making ample provision for depreciation, there is an available balance (including the amount brought forward from last year) of £146,389, which the directors propose to distribute as follows:—Dividend of 5 per cent. on preference stock, £35,000; dividend of 7½ per cent. free of income-tax, on shares, £71,790; special bonus of 2½ per cent., free of income-tax on shares £23,930; leaving to be carried forward to next year £15,669. A large number of the company's steamers have been employed by the Government as transports and hospital ships, and for other war service, and several are still so employed. The rates of hire are on the same low level as mentioned in last report, notwithstanding that market rates of freight have further considerably advanced. The services of the company's steamers have continued to give satisfaction to the Government. The directors are glad to be able to report that the steamers have run free of any serious accident during the year. Owing to the withdrawal of so many steamers for Government work, the Company's ordinary services were to some extent disorganised, but the mails have been carried with regularity. Out of the nine steamers building which were undelivered at the date of the last report two, viz., *Karoa* and *Karunga* (re-named *Karapara*), were delivered during the year, and the *Mandala* has been delivered since closing accounts. The *Margha* and *Masula* have, unfortunately, been appropriated by Government under the prerogative of the Crown, and there now remain in the builder's hands *Karagola*, *Mantcla*, *Nirpura* and *Vasna*. The directors hope to get delivery of these four steamers early in 1916. The French-owned steamer *Ohio*, purchased by the Company last year, was commandeered by the French Government, and the Company had to relinquish the purchase in return for compensation. The old steamer *Amarapoora* has been sold for breaking up. The directors have granted a war bonus to the employees afloat, and some further increases of pay, which have given general satisfaction throughout the fleet.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF LAUNCHES.

Date of Launch.	Name of Vessel and Type.	Owners.	Builders	Approx. Dimensions. L × B. × D.	Propelling Machinery and Builders of Machinery.	Remarks.
Dec. 7..	**Strathlochie** and **Strathyre** (steam trawlers).	Aberdeen Steam Trawling & Fishing Co.	Hall, Russell & Co., Aberdeen.	115′ × 22′ 13′	Hall, Russell & Co.	

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF TRIAL TRIPS.

Dec. 1 ..	**Silver Shell,** ss. (bulk oil-tanker).	Shell Company, of California	Harlan & Hollingsworth Corporation, Wilmington, Del., U.S.A.	427′ × 53′ 5″ 31′.	Tr. Exp., 27. 45, 74 × 48.; i.h.p. 2,700.	D.w.c., 8,400 tons (long) gross, 5,605 tons; net, 3,422 tons.
Dec. 2..	**Staro,** ss.	J. B. Stang, Christiania ..	A.S. Fredrikstad Mek., Verksted, and A.S. Sørlandets Skibsbyggeri, Fevig, Norway.	265′ × 42′ × 20′..	Tr. Exp., 18, 29½, 50 36. Fredriksstad Works.	3,070 d.w.
Dec. 7..	**Barrister,** ss. (cargo and pass.).	T. & J. Harrison, Liverpool	Charles Connell & Co., Glasgow.	352′ 5″ × 47′ 4″ × 26′ 9″.	Tr. Exp., 22, 37, 62 × 48. Dunsmuir & Jackson.	—
Dec. 7..	**Bostonian,** m.s. (motor ship).	Leyland Line, Liverpool ..	Harland & Wolff, Ltd., Glasgow.	400′ × 52′ × 27′..	Oil engines, 12-cyl. Burmeister & Wain, Glasgow.	— —

COMPANY MEETINGS.

Peninsular & Oriental Steam Navigation Company.—The 75th annual general meeting of the proprietors of the Peninsular & Oriental Steam Navigation Company was held, on the 8th inst., at the offices, 122, Leadenhall Street, London, the Right Hon. Lord Inchcape, G.C.M.G., K.C.S.I., K.C.I.E. (chairman), presiding.

The Chairman, who was received with applause, said: Ladies and gentlemen, we meet to-day under exceptional circumstances. Sir Thomas Sutherland, who occupied the chair at our last meeting, and who had directed the affairs of the P. & O. Company for 34 years, retired a year ago. He brought the company out of what might be described as a "slough of despond," and by his energy and ability he left it a sound and prosperous concern. I am sure you will all join with me in wishing him long life and happiness in his retirement, and if the P. & O. Company has any success in the future it will never be forgotten that it was owing to the masterful management of Sir Thomas Sutherland in its days of depression. He has left us a splendid legacy. With the loyal assistance of our staff it will be our earnest endeavour to carry on the administration of the P. & O. Company, not only to your satisfaction, but to the satisfaction of the Government and the public.

Forty-Two Steamers Taken.

The year under review has been quite abnormal, owing to the war. No less than 42 steamers of the P. & O. fleet have been taken from their usual work from time to time, and 31 are still being made use of by the Government. The Board have, in consequence, had a considerable strain put upon them to maintain the regular mail services, but you will be glad to know that so far they have not been obliged to cancel a single departure. Something like 480 of the P. & O. and British India officers and engineers have gallantly joined His Majesty's service, mostly afloat, and are fighting for their country. Sixteen have been wounded, 27 have been killed. You will be glad to hear that one—a P. & O. cadet—the son of Mr. Drewry, our works superintendent, a boy of 18, has won the V.C. His father tells me the boy says he intends to return to the P. & O. Company after the war. Let us hope that he will win through and rise eventually to be Commodore of the P. & O. fleet. The positions of our men for the most part remain open for them after the war, and meantime, as a rule, they don't suffer pecuniarily. The directors desire to express their appreciation publicly of the manner in which those who remain with us, who are doing good public service and running great risks, have responded loyally to the work, though the ships have in almost every instance been obliged to go to sea with less than their usual complement of officers and engineers. Their only complaint has been that they have not had an opportunity of doing more for their country. But when you consider that 42 ships out of our fleet of 60 have been engaged in Government service at one time or another, and that the ships which have remained to us have been carrying the mails and keeping up communications, I am satisfied you will consider that the men in the P. & O. vessels engaged in the company's ordinary work have been doing good service for the country. The cost of operating the ships has increased by leaps and bounds; wages have risen—the suppliers of stores of all descriptions have raised their prices, in some cases by 50 per cent.—while the cost of supplying coal at Port Said is nearly three times what it was before the outbreak of the war. Some six months ago we raised our passage rates two or three pounds to help to meet to some extent the increased cost of working, and reluctant as we shall be to make any further increase, I am afraid this may be forced upon us.

Lack of Repairing Facilities.

The Budget will take something out of the company's earnings, and what is left of the surplus over the average of the two or three preceding years will in all probability be to a great extent swallowed up in the impending overhauls of the ships through being hard driven and through difficulty in getting labour to do the repairs. We do not know what the future has in store in the shape of additional levies which will be made on you to meet the expenditure involved by the war. Whatever these may be, they have to be met, and as our men of a fighting age are giving their lives, so must we give our property to the nation. No sacrifice is too great to secure that victory without which life would be intolerable. The levy of 30,000,000 on capital indicated by the Budget—a very moderate estimate, I think—will be lost to reproductive enterprise in this country. While it may help to pay the expenses of the war for the moment, I think it is recognised that it is not in the interests of the country to withdraw large sums from earning taxable revenue. When the war is over, a large income will be required to meet obligations incurred bythe war, to carry on the administration of the country and to pay for the country's defence. I am glad to observe that the Chancellor of the Exchequer has stated that the special levy on an increase in profits instituted in this emergency is not to form an integral part of the fiscal system of the country. When the war is crowned with victory for the Allies, as it will be, the resources of the country, the intelligence, the energy, the industry, and, let us hope, the thrift of the people will reassert themselves, and Great Britain will continue to be, as she still remains, despite the demands upon her, the financial centre of the world. There is no doubt that most shipping companies have made money during the last 12 months, owing to the rise in freights, brought about by so many ships belonging to ourselves and our Allies having been engaged for the purposes of the war, and through the German and Austrian mercantile marine having been driven from the sea.

The Aftermath.

The aftermath of the war has to be reckoned with, and the future of the shipping industry of Great Britain will doubtless have much to contend with, especially as neutral and some other shipowners who have been reaping a far richer harvest than British shipping will find themselves in a much better position to develop than will be the case with British shipowners; but, speaking for myself and for the P. & O. and British India Companies, I have no fear for the future. It may be an anticipation of coming bad times that is inducing some shipowners in this country to take advantage of the present inflated prices of ships to dispose of them and to retire from business. For the P. & O. and British India Companies there is no such *dolce far niente*. They are carrying on a national work, and they could not, if they would, wind up and go into retirement. On the contrary, they must and will continue to develop; they must endeavour, and they will endeavour, to maintain their services to the satisfaction of the Government and of the public. They must make provision for their employees when the time comes for them to coil up their ropes ashore; they must lay by ample depreciation for reinvestment in up-to-date vessels, and they must set aside a good margin of surplus profits in fat years to provide for the contingency of lean periods, and you must rest content with a return in the way of dividend which can only be described as moderate for the risks you run and for the capital you employ in your undertakings. The steamers which have been commandeered by Government as armed cruisers, transports, and hospital ships are being paid for at rates leaving but a very moderate margin when everything is taken into consideration.

Patriotism of Owners.

The shipowners have met the Government fairly and reasonably, their disposition having been to aid the country in this national emergency. Only the other day a suggestion was made by the Admiralty to reduce rates for certain classes of ships which had been under charter for a considerable time, and despite the facts that freights in ordinary trades had advanced considerably, the shipowners agreed to the suggestion of the Admiralty. On the 2nd of last month I heard the Prime Minister's historic statement in the House of Commons as to our position after 15 months of war. He alluded to the fact that the Transport Department of the Admiralty had, since the war begun, carried across the seas 2,500,000 officers and men, 320,000 sick and wounded and nurses, 800,000 horses, mules and camels, and 2,500,000 tons of stores and munitions. He said that these operations had involved thousands of voyages, and that they had been performed with less than $\frac{1}{10}$ per cent. loss of life. He also said that these figures were exclusive of millions of tons of stores, mainly coal and oil, which had been carried for Allied Governments. I was delighted to hear the well-earned praise bestowed on the Transport Department of the Admiralty, the work of which has been enormous, and, if I may venture to say so, the way it has been carried out reflects the greatest credit on the director, Mr. Graeme Thomson, and his lieutenants. I am sure, in eulogising the Government Transport Department, the Prime Minister meant to include the mercantile marine, which had provided the means of doing this service for the country and for our Allies. The shipowners, by their enterprise, provided the ships; they placed them at the disposal of the Government, and maintained them in efficiency. The masters and officers navigated them, the engineers did their duty below, bearing the greatest risk from submarines, and the

crews have borne themselves with that courage which has always characterised not only the British seaman but the Lascar. Without the British mercantile marine where would the country have been in this war ?

Provision of Transports.

The British Government did not possess a single transport, a single vessel adapted for the conveyance of munitions or stores or horses or mules or camels, or a single hospital ship. Why did the Admiralty not possess a fleet capable of doing that magnificent work of which Mr. Asquith spoke in such glowing terms the other night ? I will tell you why. The Admiralty had far more sense. They had the plans, and they knew the dimensions, the capacity, the equipment, the speed of every British ship afloat, and her whereabouts. They had been scheduling these in their own quiet way for years. They recognised that the most economical, in fact, the only possible plan, was to let the shipowners go on building vessels on their own account, running them in their ordinary trades without a farthing of expense to the country, because they knew when the hour struck and the Admiralty required their services the ships would be at the disposal of the nation on perfectly reasonable terms, and in this they were right. There has long been a curious disposition on the part of some politicians and others to be what I might call in homely parlance " down " on the British shipowner. I do not know why, unless it is because a certain amount of success has attended his efforts, his energies, and his enterprise. Unaided by Government favour, in spite of obstructions and difficulties which he has constantly had to encounter, he has built up a fleet and an organisation which is the envy of the world, and which the German Emperor was always urging Herr Ballin and other German shipowners to follow and surpass. The encouragement given by the German authorities was not only moral, but material.

Suez Canal Traffic.

Between the months of November, 1914, and February, 1915, there were a few delays in the transit of steamers through the Suez Canal, caused by the action of the enemy, but, thanks to our naval and military forces and to the resource and energy of the Canal Company's officials, the delays were infinitesimal. The president and directors of the Canal Company invest their officials in Egypt with wide discretionary powers, unfettered by red tape, and these powers are invariably exercised for the benefit and convenience of the ships using the Canal, the attitude of the officials being invariably courteous and helpful. The advance of the Suez Canal Company's receipts has been checked by the war. In that company's prosperity the shipowners hitherto have shared, advances in the rate of dividend having been accompanied by reductions in dues. For the year 1914 the Suez Canal dividend had to be reduced by 45 fr. per share, but the shareholders accepted the reduction uncomplainingly, and the dues were not increased. For 1915 the reduced dividend will again operate, and it can only be maintained at the 1914 rate by wiping out the reserve set aside in the previous year. For 1916 the outlook is not bright, and the Canal Company propose to raise their charge by 50 centimes per ton from April 1 next; that is, from 6·25 to 6·75 fr. per ton. This will involve the P. & O. and British India Companies in a considerably larger expenditure for passing through the Canal. But I do not think we can reasonably raise any objection. The expenses of operating the Canal have increased considerably owing to the rise in cost of coal and stores, the standing charges can only be slightly reduced, while the franc is worth a good deal less in sterling than it was before the war, and the dues, as you know, are paid in francs. If the traffic decreases further we may have to face another rise, but if the traffic does not further decrease, or improves, as we hope it may, the 6·75 fr. rate should remain. When normal conditions return we hope the Canal Company will be able to revert to the 6·25 rate, and we look forward to a gradual reduction from that figure to the 5 fr., which we trust may be ultimately established. The Suez Canal Company has dealt reasonably and fairly with the shipowners in the past, and I feel satisfied that the shipowners will be disposed to meet the company in the same spirit in the unfortunate position in which the company finds itself placed owing to the war. The gallant French nation is making great sacrifices in blood and treasure to secure that victory on which we are all determined, and which will come to us in due time. A dividend of 120 fr. per share will yield something under 3 per cent. on the value at which the shares have been bought by the great majority of the present shareholders, and this I am sure no one on this side of the Channel will grudge.

50 Per Cent. in Government Service.

I have mentioned that over 50 per cent. of our steamers are in Government service. The bulk of the remainder of our fleet has been hard run, maintaining our onerous mail contract, and the demands on the limited space of our fast ships for the carriage of mails have been altogether unprecedented. Owing to dislocations in other quarters and for other reasons, our ordinary mails have increased in bulk, while the letter and parcel mail to the Mediterranean and Egypt is 10 times greater than it was some six or eight months ago. Our vessels have now to find accommodation for mails frequently occupying 1,200 to 1,800 tons of space, which leaves very little room for cargo, and we are obliged under our contract to carry all mails that are offered to us. We find ourselves in consequence under a considerable disability, but I make these remarks in no spirit of complaint; on the contrary, we have the satisfaction of feeling that we are doing our duty by the Post Office, which we have served now for an unbroken period of 78 years. I am sure the proprietors will support the Board in the attitude of reasonableness which they have adopted towards His Majesty's Government at the present time, even at some very considerable loss to themselves. To use the formula which was wont to appear in the good old days in the gracious speeches from the throne, the P. & O. Company is at peace with all with whom it does business—the Admiralty, the Post Office, its fellow-shipowners, its cargo constituents, its passengers, and its employees. The war has made it impossible to lay down any new ships for early delivery in the past 12 months, all the yards being for the most part occupied with Government work, and the only vessels we have under construction are two high-class mail steamers. The Board, however, have an extensive building programme in view, and as soon as circumstances permit we shall arrange for the construction of a number of vessels, the plans and arrangements of which are being carefully considered; and the directors hope that before long circumstances may permit of their being able to place contracts for a number of vessels which will enable the company to carry on its mail, passenger, and cargo services to the satisfaction of the Government and the public, and to meet developments. The prices we shall have to pay will be high, but the directors feel that this should not deter them from keeping the fleet up to concert pitch.

Losses.

I regret to say that our cargo steamer *Socotra* has been wrecked in the English Channel since the issue of our report. She was homeward bound from Australia, and had no passengers on board, and there was no loss of life. Being 18 years old, she stands at a low value in the company's books, but she was a very useful ship and can ill be spared at the present time. I am also sorry to say that a fine new British India steamer of 5,312 tons, the *Umeta*, of which we only got delivery from the builders a year ago, and which was engaged in Government service, has been torpedoed in the Mediterranean within the last few hours. The loss of this vessel falls upon the Government, but she cannot be replaced for many months. The fate of nearly half of the crew is not yet ascertained; they are reported as missing, while the other half has been landed at a Mediterranean port.

As in Times of Peace.

You will realise that with vessels constantly in the danger zone, the past year has been an extremely anxious one for the directors, and their anxieties do not grow less as time goes on and the danger zone enlarges. But I am glad to say that week after week with unfailing regularity, without exception, all through these 16 months of war, the P. & O. mail steamers have started on their voyages from this country to the far ends of the earth with their usual complement of passengers just as in times of peace. In seeing them leave Tilbury Dock with crowds on deck and handkerchiefs waving, in going up and down Channel with them, as I have frequently done, it has come home to me very closely how enormously we are indebted to the organisation of the Trade Division of the War Staff Department of the Admiralty, to its chief, Captain Richard Webb, and to the British Navy generally, for the protection of our ships. The Admiralty's confidential instructions to the masters, which naturally I see in confidence, are marvels of thought, conciseness, and simplicity, and it is to the strict observance of these by our commanders, and to the watchful care of our Navy, that our freedom from disaster so far—in a good hour be it spoken—is to be attributed. We cannot be too grateful to the Admiralty and to the Navy for the complete immunity from casualty from enemy ships with which the P. & O. vessels, their passengers, and their ships' companies have been

able to sail the seas all through this war. Now that German intentions have been disclosed, the position in which this country would have found itself without an overwhelmingly strong Navy is not pleasant to contemplate. But for the Navy we should in these islands have been at the mercy of our enemy, and but for our sea power the British Empire would have been broken up. In looking back we can appreciate how justified was the public pressure which was brought to bear from time to time to keep the Navy up to a high standard. The country owes a debt of gratitude to our naval officers, and to Lord Fisher in particular, for their determination and foresight in planning that provision of naval defence which was necessary for our protection. To Mr. McKenna, above all others, we are indebted for the sea power which in the end, under the able direction, genius and skill of Sir John Jellicoe, and those under him, will bring us out of this war with victory.

The British India Amalgamation.

You will be glad to know that the amalgamation of the P. & O. and British India Companies, which was completed about 15 months ago, is working in every respect satisfactorily, and that considerable advantages have already been realised by the complete fusion of interests, and as time goes on these should be increased. After a year's experience of the administration of the two companies, I am glad to say that the anticipations of 18 months ago which led the directors to bring about the amalgamation are being realised. Our basis has been broadened, our interests are now in all respects identical, the combined experience of our staffs is a most valuable asset, while the financial assistance which one company can render to the other has material advantages. It may be that in some years the P. & O. section of the combine will be good, and the British India section will be poor, while the reverse may possibly happen; but we are sanguine enough to hope that, taken together, we shall be able to average out a modest return to the proprietors on what is, considering the intrinsic value and earning power of our joint assets, a very small capital.

Free of Income-Tax.

When paying the interim dividend on our deferred stock in the spring, the Board gave it—perhaps you may think too generously—free of income-tax. The tax was then 2s. 6d. in the £. Now it is considerably more, but having started on what you may regard as a rake's progress, we propose, with your approval, to apply it to the final dividend and bonus, at least for this year. In speaking of income-tax, there is one small matter, personal to the Board, which I must bring to your notice. Ever since the company was established or income-tax introduced, the remuneration of the directors has been paid free of the tax, but though there is probably a resolution by the proprietors to this effect in the dark ages, so far I have failed to find it. As the tax has gradually gone up from 2d. in the £ to the figure at which it stands to-day, the directors think the matter should be brought to your notice and regularised. The directors have made ample provision for depreciation, both in our ships and in our securities. Every penny not required in the business of both companies has been lent to the Government to assist in financing the war, and on this course it is our intention to continue. In submitting our accounts to you to-day I hope you will accept them in the form in which they are presented by the Board. I will forestal any criticism as to the absence of detail by saying at once that we have adopted this plan deliberately because we conceive it to be in the best interests of the proprietors. Were the accounts to be seen by our shareholders alone we should have no hesitation in presenting them in a much more detailed form, but in view of the keen competition which we may expect in the near future from neutral shipowners, who have been coining money during the war, free from Budget levies, and in view of the renewed attacks upon our trade which we may anticipate, not only from Germany and from Austria, but from others, when the war is over, we see no advantage, but very much the reverse, in publishing your private affairs to the world. I feel satisfied that you will approve of the course we have adopted. So long as the directors have the confidence of the proprietors nothing more is required. No matter what the dividend may be, whether it remains as at present, whether it is increased, or whether it is reduced, you may feel perfectly satisfied that not a penny will ever be distributed beyond the amount which the company, after making ample allowance for depreciation and all contingencies, can well afford to pay. I beg to propose that the report and accounts be adopted.

Sir William Adamson, C.M.G., seconded the resolution, which was carried unanimously.

John I. Thornycroft & Co., Ltd.—An extraordinary general meeting was held on December 8 at Winchester House, London, E.C., Mr. John E. Thornycroft, M.I.N.A. (Managing Director), presiding.

In moving the adoption of the report he said that their simplest and best course had been to take stock and prepare the company's accounts up to July 11, 1915, and for the future the accounts of the company would be prepared as on July 31 in each year. There were many advantages in adopting this date instead of December 31, one of the main reasons being the fact that the works had to be closed for the week including the August Bank Holiday to allow for workmen's holidays, and stock could be conveniently taken at such time so avoiding closing down specially again for it on December 31. The position shown by the balance-sheet is a very satisfactory one. The application money had been paid in respect of £50,000 War Loan stock, which had since been paid for in full under discount. The item of freehold and leasehold land and buildings, &c., formerly included patterns, drawings and patent rights. As no value remained in the books in respect of these latter items the descriptive heading had now been included with the goodwill, which item now appeared as goodwill, patterns, drawings and patent rights, and stood in the accounts at the figure of £50,000. By reference to the report it will be seen that they proposed to write off £49,000 of this amount leaving the goodwill, patterns, drawings and patent rights standing in the accounts for the future at the nominal sum of £1,000. The net profits of the company for the period covered by the accounts amounted to £244,826. Last May he referred to the fact that £90,000 had been spent in additions to buildings, plant, &c., since 1911. The necessary cash for this expenditure had been provided by the writing down of such items as debenture issue expenses, patterns, drawings, patent rights, &c., out of profits, so that it might be said that the outlay had been made at the expense of the ordinary shareholders. The effect of this and further outlay during the war period had been to put the company in a position to deal with an enormously increased output on a profitable basis. The period covered by the accounts now before them had benefited greatly by such contracts placed on the outbreak of war. Their turnover had been about four times the normal average, and this had been done and was still being carried on without any increase of issued capital or borrowed money. Their capital in the business (that was to say, the assets, less the liabilities) was roughly £900,000 at July 11, 1915, being an increase over the 1913 figure of over £250,000, and this sum was provided out of profits, which meant that such profits could not be distributed, but must be kept in the business by writing down assets such as goodwill or creating reserve funds. A large working capital was necessary at the present moment, but after the war it would be still more necessary, so that they might have a good fighting fund to win back their commercial vehicle connection in particular, which had been built up with so much hard work and at such great expense, and now very largely lost by reason of American competition at a time when they were unable to supply by reason of Government work. The last and most serious point which arose is the question of war taxation. The excess profits clauses of the Finance Bill were very complicated, and a basis of taxation could be arrived at only by negotiations in their case. Under those circumstances, it was felt that a very large amount must be transferred to a reserve fund in addition to the carrying forward of about £78,000. There was every prospect of good profits being made while the present turnover continued and, although the position as regards taxation under the income-tax, excess profits tax and controlled tax was by no means certain, shareholders might rely upon the directors doing their best to retain sufficient funds in the business to enable reasonable dividends to be paid and to enable them to build up a reserve to meet exceptional difficulties which would arise after the war by reason of heavy, and perhaps after the war to some extent unsaleable, stocks. The balance-sheet showed an appropriation of £20,000 to a benevolent fund. The large turnover had been successfully carried out without a corresponding increase in staff. This had entailed heavy work and responsibility and although fortunately they had had practically no breakdown in health up to the present, a long period of overwork was bound to have its effect in some cases. It was only a fair thing to charge against profits the sum of £20,000 for the creation of a benevolent fund, out of which to make grants to members of the staff and employees in certain cases of ill-health, termination of service, &c.

Mr. Alexander Clegg, J.P., seconded the motion, which was carried unanimously.

The remuneration of the directors was increased from £300 to £400 per annum.

Griffiths, Lewis Steam Navigation Company, Ltd. The annual meeting was held on Tuesday, at Cardiff. The Chairman (Mr. E. T. Griffiths), in moving the adoption of the report, said that he regretted that there was no prospect of an early termination of the war. However much shipping had benefited in consequence of this European conflict, they preferred their industries to flourish at lower profits under normal peace conditions. Meanwhile, it was a source of satisfaction to know that our mercantile marine had played an important part in maintaining the supremacy of the British flag upon the seas, the co-operation of our cargo-carrying fleet having contributed to the operations of our naval squadrons. On the other hand, we were conscious of the protection our battleships had given to our shores, our homes and to our mercantile tonnage. Great Britain, directly or indirectly, was essentially a mercantile nation. It was of paramount necessity that both from a national standpoint and a commercial standpoint every encouragement should be given to the shipping industry, and whilst we were bound to recognise the need of the Chancellor of the Exchequer, it was to be hoped that due consideration would be given to the shipping interests by allowing a liberal proportion of the earnings to remain to provide capital for future extensions, and to give our shipyards employment for some years to come. Personally, he thought the future had in store for them an even greater control of the shipping trade of the world, and so long as no undue impediment in the nature of burdensome exactions was placed upon owners the shipping community might be relied upon by enterprise and effort to look well after this department of our national interests. Furthermore, the investing public, which had been very shy of shipping investments outside of the large liner companies, had begun to make serious inquiries about this source of investment, and already a very large number had entered the lists as investors, and the area was rapidly extending. Naturally, some of the hesitating investors referred to losses made by shipping shareholders in the past, but it would be generally found that these losses were the results of investments during the early days of small steamships when it was costly to build and costly to work. The first argument used against the profitable working of a steamship was that a steamer would consume more coal in the running than she could carry as cargo. They had outlived those days. Later on there were losses sustained in consequence of the reaction from the high freights during the Boer War, when ships ordered during the boom were not delivered in time to participate in the exceptional rates that had been ruling. This was succeeded by a period of dumping cheap material upon the country, which enabled the builders to construct ships at an extremely low cost. Many shipowners took advantage of the low cost, and they were reaping the benefit of this to-day. He had great faith in shipping as an investment, and although shipowners had their period of stress and anxiety and special expense, under good management and careful attention to the property there should be a good average yield to the investor. As for the present, they had to deal with a situation that had never before to be faced. They were fighting for existence and for principle, and it was not a time to count profits in an ordinary sense. As regarded his company all he was prepared to say concerning the future was that the directors would not be wanting in devoting their best services to the interests of the company. It nevertheless became their duty to deal with the financial position of the company as at September 30. A copy of the balance sheet had been posted to every shareholder. They would see that the property of the company consisted of four steamers with an aggregate carrying capacity of 25,850 tons. The company had not had the full benefit of the working from any of the steamers during the year. At the time war broke out, the steamers *Tyninghame* and *Reliance* were in Continental ports, and suffered long detention before being released. They were fortunate in having them free in the nick of time, otherwise they would have been held up during the whole period of the war at considerable expense, and the company deprived of their earning power. The *Sidmouth* commenced working for the company early in June, and therefore only contributed four months' earnings to the result. The *Ecclesia* was not delivered until later, viz., early August, and consequently was at work for barely two months during the period under review. Profits to September 30 amounted to £28,454 0s. 10d. Dividends totalling 20 per cent. had been paid, against this, and a substantial balance had been carried forward to meet the requirements of taxation. Since the close of their financial year, the freight and shipping property markets had advanced considerably, and the rates now ruling were unparalleled in the annals of shipping. Whilst they had every reason to be satisfied with the progress already made, he might say that it was their intention to keep awake upon trade necessities, and as opportunity offered, to still further extend the scope of the company, to keep well abreast of the times, and to do their part towards fostering the best interests of their premier industry.

The motion was carried unanimously.

PORT NOTES.

Hilo Harbour (Hawaii).—The breakwater has been completed for about half its total length, and the maximum depth of the entrance is 33 ft. at mean lower low tide.

Madras.—The Madras Port Trust have made the following additions to the Trust's by-laws:—"10 (*a*). The master of any vessel discharging timber into the sea at the port of Madras shall cause such timber to be actually lowered into the water and shall not allow it to be thrown overboard. Any person contravening this by-law shall, on conviction before a magistrate, be liable to a fine not exceeding Rs. 100 for each offence."

Chittagong.—The report for 1914-15 shows that 714 vessels (including 429 inland steam-vessels), with a gross tonnage of 6,186,622, entered, and 705 vessels (including 415 inland steamers), with a gross tonnage of 617,855, left the port during 1914-15. In the previous year 753 vessels (including 378 inland steamers), with a gross tonnage of 797,332, entered and 742 vessels (including 378 inland steamers), with a gross tonnage of 792,489, left the port.

Pensacola.—Work of demolishing part of the Muscogee wharf, Pensacola, for the installation of modern coaling machinery has been started by the Robinson-Schaefer Company of Chicago. The machinery to be installed will have a capacity of 400 tons per hour and will be equipped with a duplicate hoist. The Gulf, Florida & Alabama Railroad has also let a contract for the construction of a modern coaling dock. The electrical machinery to be installed at this dock will have a loading capacity of 600 tons an hour.

Port Kembla, N.S.W.—The *New South Wales Government Gazette* of September 8 publishes the text of new Wharfage Regulations, issued by the Department of Public Works at Sydney, under date August 31, applying to Port Kembla Harbour, N.S.W. Appended to these regulations is a schedule giving detailed wharfage rates in respect of goods shipped inwards and outwards. The above-mentioned issue of the *Gazette* may be consulted by United Kingdom shippers interested at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C.

United States of America (Philippine Islands).—According to the *Weekly Commercial News* (San Francisco) of September 18, the work of improving the port of Cebu is being rapidly pushed forward by the Bureau of Public Works, and the engineers in charge estimated that all the improvements now under way would be completed within two months. This will make Cebu one of the best equipped ports in the Far East, with its 3,000 ft. of concrete sea wall; with berths for two steamers drawing 30 ft.; with a 50-ton crane available; and with all asphalt-paved street approaches.

Calcutta.—A committee of consultants is considering the method of constructing the lock entrance to the new docks, the designs and estimates for which were drawn up by Mr. John Scott, Chief Engineer of the Calcutta Port Commission, who is now in England and a member of the committee. One of the points to be settled is whether the lock should be built solely of granite, or whether cheaper material could be employed. The estimate for the former is 151 lakhs, whereas if granite is partially used a saving of at least 20 lakhs could be effected.

Rotterdam.—The two great German North Sea ports of Bremen and Hamburg have been virtually cut off from all sea traffic since the beginning of the war, and the same fate has befallen Antwerp since it came into German hands. Naturally, Rotterdam has benefited by the misfortune of its rivals. It is hoped that this prosperity will be secured permanently to Rotterdam by deepening its main water channel to 37 ft. 6 in. and later to 41 ft. "By this important work, which has already been put in hand despite the unfavourable financial position of Holland, it is intended," says the *Hamburger Nachrichten*, "to attract to Rotterdam the largest liners which have hitherto sailed to Antwerp and Hamburg; but we doubt not that we Germans will succeed in regaining our lost world traffic after the war." That, of course, is as may be.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF MARINE CASUALTIES

(Including losses incidental to the war).

Vessel.	Gross Tonnage.	Owners, Builders and Year Built.	Casualty.
Aghios Nikolaos, ss.	2,231	N. Valmas, Syra. J. Readhead & Co., South Shields. (1887.)	(See also *S. & S.R.*, Dec. 9. DEC. 12. Brought into Pirœus by salvage steamer. Ship making water. Part cargo salved.
Bitinia, ss.	3,125	Bitinia S.S. Co. (D. Tripcovich, Trieste. J. Readhead & Sons, South Shields. (1900.)	NOV. 18: Reported "sunk."
Busiris, ss.	2,705	Moss S.S. Co., Liverpool. J. Blumer & Co., Sunderland. (1904.)	DEC. 11: Reported "sunk." Crew landed at Alexandria.
Cito, ss. (wooden)	187	H. J. Amen, Brevik, Norway. Built at Stavanger, Norway. (1873.)	DEC. 10: Lillesand for Burntisland. Cargo props. Abandoned 6 miles west of Hvitingso, Norway. Brought into Vearvag by two motor cutters later.
Commodore, ss.	5,858	Charente S.S. Co. (T. & J. Harrison, Liverpool. C. Connell & Co., Glasgow. (1906.)	DEC. 7: Reported "sunk."
Fresnel (French submarine)			DEC. 7: Sunk by Austrian warship.
Henrik Wergeland, ss.	488	Nordenfjeldske D.S., Trondhjem. G. Howaldt, Kiel. (1883.)	DEC. 3: Ashore in Bronoysund. Water in engine room.
Ignis, ss.	2,042	Gas, Light & Coke Co. (Stephenson, Clarke & Co., London). Bonn & Mees, Rotterdam. (1903.)	DEC. 8: Reported "sunk." Crew saved.
Inger Johanne, ss.	1,609	A.S. Jacob Kjodes Reder (J. Kjode), Bergen. Palmers Co., Newcastle. (1883.)	DEC. 8: Stranded near Yarmouth. Cannot board her on account of heavy weather.
Ingstad, ss.	780	Jacob Kjöde, Bergen. R. Williamson & Son, Workington. (1910.)	DEC. 11: Reported "sunk."
Lanao, ss.	692	Findlay S.S. Co., Manila, U.S.A. Scott & Sons, Bowling. (1912.)	DEC. 10: Ashore Marinduque (Philippine Island). Feared total loss.
L. G. Goulandris, ss.	2,123	Goulandris Bros., Andros. Ropner & Son, Stockton. (1896.)	DEC. 9: Reported "sunk." Crew landed at Alexandria.]
Minnesota, ss.	20,718	Gt. Northern S.S. Co., New York. Eastern S.B. Co., New London, U.S.A. (1904.)	(See *S. & S.R.*, Dec. 9.) DEC. 7: 600 miles from port. Efforts to be made to salvage her. Weather calm.
Nereus, ss.	742	Akt. Nereus (Pettersen & Ullenaes), Porsgrund. Rijkee & Co., Rotterdam. (1898.)	DEC. 10: Reported "sunk."
Orteric, ss.	6,535	Bank Line, Ltd. (A. Weir & Co.), Glasgow. Russell & Co., Port Glasgow. (1911.)	DEC. 14: Reported "sunk."
Pinegrove, ss.	2,847	Alexander & Mair, Glasgow. C. S. Swan & Hunter, Newcastle. (1896.)	DEC. 12: Reported "sunk." Twenty-two of crew saved.
Plévné, ss.	1,154	Administr. de Nav. à Vap. Ottomane, Constantinople. W. B. Thompson & Sons, Sunderland. (1902.)	NOV. 18: Reported "sunk."
Rosmer, ss.	694	Lidkopings Angfartygsakt, Lidkoping. Tyne Iron S.B. Co., Newcastle. (1891.)	DEC. 11: Reported "sunk" near Bergen.
Skraastad, ss.	1,390	Akties. Dmpsk. Skraastad (S. O. Stray & Co.), Christiansand. Palmers Co., Newcastle. (1881.)	DEC. 3: Port Talbot for Bordeaux. Overdue.
Star of New Zealand, ss.	4,417	Star Line (J. P. Corry & Co.), London. Workman, Clark & Co., Belfast. (1895.)	See *S. & S.R.*, Dec. 9. DEC. 10: Heavy sea. Vessel breaking up. DEC. 11: Broken up and disappeared.
St. Kilda, ss.	3,947	British & Foreign S.S. Co. (Rankin, Gilmour & Co., Liverpool. W. Hamilton & Co., Port Glasgow. (1911.)	DEC. 11: Cargo coal: ashore at Little Miquelon. Position dangerous.
Tringa, ss.	2,154	Cork S.S. Co., Cork. Swan, Hunter & Wigham Richardson, Newcastle. (1908.)	DEC. 9: Reported "sunk."
Veria, ss.	3,229	Cunard S.S. Co., Liverpool. Armstrong, Whitworth & Co., Newcastle. (1899.)	DEC. 9: Reported "sunk."
Vesta, ss.	922	A. Kirsten, Hamburg. Blohm & Voss, Hamburg. (1882.)	DEC. 8: Hamburg to Ystad (Sweden) with cargo briquettes, ashore near Hesnaes. Endeavouring to lighten vessel.
Woodfield, ss.	3,584	Woodfield S.S. Co. (Woods, Tylor & Brown), London. J. Priestman & Co., Sunderland. (1905.)	DEC. 8: Reported "sunk."
Zillah, ss.	3,788	Turner, Brightman & Co., London. Bartram & Sons, Sunderland. (1900.)	DEC. 11: Outbreak of fire in engineers' quarters and mess room. Repairs will take about a week.

MANUFACTURING AND INDUSTRIAL NOTES.

David Colville & Sons, Ltd., Dalzell Steel and Iron Works, Motherwell, advise us that the prices of their manufactures have been altered as follows:—

	£	s.	d.
Dalzell	13	0	0
Dalzell best	13	7	6
Dalzell best horse shoe	13	10	0
Dalzell angle	13	0	0
Dalzell best angle	13	7	6
Dalzell best best	13	15	0
Dalzell extra best	14	2	6

THE OVERDUE MARKET.

The following list includes vessels considered to be overdue or on which extra rates are considered necessary.

	Gns.
Invermark (s.v.). Fremantle, July 17, to Iquiqui	90
King Edward (s.v.). Sabine to River Plate; lifeboat picked up	92
Llandaff (s.v.). Port Arthur, Texas, August 13, to United Kingdom	92
Minnesota. In distress off San Francisco	10
Telius. Ashore Nemuro	70
Rafael. Ashore outside Garston (copper)	30

The steamer *Aghios Nicolaos*, on which 40 guineas was quoted, has been floated.
The sailing vessel *Vanadis*, on which 25 guineas was quoted, has arrived.

OFFICIAL NOTICES AND SHIPS FOR SALE.

FOR SALE.

(PARTICULARS NOT GUARANTEED.)

Folio 9294.—New Steamer now building. About 7,100 tons d.w. on about 23 ft. 7 in. draught. Shelter Deck Type. Triple Engines. Three Single-ended Boilers. Speed estimated 10 knots.

Folio 9008.—Built 1914. About 7,200 tons d.w. on about 23 ft. 3 in. draught. Two Decks. Triple Engines. Three Single-ended Boilers. About 10–11 knots on about 26 tons.

Folio 7974.—Built 1904. About 6,375 tons d.w. on about 24 ft. 6 in. One Deck Laid. Triple Engines. Two Single-ended Boilers. About 9 knots on about 20 tons. Early delivery.

Folio 6682.—Built 1903. About 3,600 d.w. on about 18 ft. 9 in. draught. Single Deck. Triple Engines. Two Single-ended Boilers. About 9 knots on about 13 tons.

For further Particulars, Plans, Prices, &c., apply to

THOS. PINKNEY & SONS,

Sunderland.

Telegraphic Address—"Spardeck."

THE Proprietors of the Patent No. 18,783 of 1913, for "Improvements in or relating to Oscillatory Electrodynamic Apparatus for Submarine Signalling and other purposes," are desirous of entering into arrangements by way of licence and otherwise, on reasonable terms, for the purpose of exploiting the same and ensuring its full development and practical working in this country. All communications should be addressed in the first instance to:—HASELTINE, LAKE & CO., Chartered Patent Agents, 28, Southampton Buildings, Chancery Lane, London, W.C.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Advance, ss. (well dk.) renamed **Sisto**	1,416 gr. 888 net. 1,870 d.w.	244′ × 34′ × 15½′ (16′)	Akties. Hekla (Mail & Holloa), Christiania, to B. Stolt-Nielsen, Haugesund, Norway	R. Duncan & Co., Pt. Glasgow (1880)	22, 58 × 36 (Rankin & Blackmore, Greenock)	
Birkhall, ss. (spar dk.)	4,218 gr. 2,731 net	360′ × 48′ × 26′ (24½′)	West Hartlepool S.N. Co., W. Hartlepool, to Cardiff buyers	R. Craggs & Sons, Middlesbrough (1900)	24½, 40, 68 × 48 (Sir C. Furness, Westgarth & Co., Middlesbrough)	Price about £70,000.
Cairnalt, ss. (ex *Sarah*)	1,410 gr. 886 net 2,120 d.w.	248½′ × 36′ × 17′ (17½′)	Cairn Line of S.S. (Cairns, Noble & Co.), Newcastle, to Russian buyers	J. Readhead & Co., South Shields (1882)	20, 54 × 36 (J. Readhead & Co.)	Has been lying at Petrograd since beginning of war.
Doonholm, ss. (spar dk.) (ex *Hillglen*)	4,291 gr. 2,777 net	385′ × 49½′ × 18½′ (23½)	Scotia S.S. Co. (Shankland, Russell & Co.,) Liverpool, to Liverpool buyers	Russell & Co., Pt. Glasgow (1907)	25, 42, 68 × 48 (J. G. Kincaid & Co., Greenock)	Price about £87,000.
Driva, ss. (well dk.)	1,274 gr. 763 net. 2,130 d.w.	229½′ × 35′ × 16′ (16½″)	J. T. Salvesen & Co., Grangemouth, to buyers not stated	Campbeltown S.B. Co. (1908)	18, 27½, 45 × 33 (Hutson & Sons, Glasgow)	
Hatasu, ss. (spar dk.)	3,358 gr. 2,160 net. 5,580 d.w.	337½′ × 45½′ × 17½′	Government of Ecuador, to buyers not stated	Furness, Withy & Co., W. Hartlepool (1899)	23½, 38, 64 × 42 (T. Richardson & Sons, Hartlepool)	Price about £45,000.
Homewood, ss. (pt. awning dk.)	2,024 gr. 1,291 net. 3,190 d.w.	271′ × 40½′ × 17½′ (18½′)	Constantine & Pickering SS. Co., Middlesbrough, to British buyers	R. Craggs & Sons, Middlesbrough (1897)	20, 32½, 53 × 36 (Sir C. Furness, Westgarth & Co., Middlesbrough)	—
Isle of Arran. s.v.	1,918 gr. 1,750 net. 3,020 d.w.	262¾′ × 39′ × 23′	Isle of Arran S. Co. (A. Weir & Co.), Glasgow, to British buyers	Russell & Co., Pt. Glasgow (1892)		Price about £14,000.
Ithaki, ss. (spar dk.) (ex *Inchkeith*)	3,739 gr. 2,418 net. 5,810 d.w.	348′ × 47′ × 16½′ (22½′)	P. D. Baroumos, c/o Messrs. Stathatos & Co., London, to Norwegian buyers	W. Gray & Co., W. Hartlepool (1899)	17, 24, 34 (2) 42 × 42 (Cen. Mar. Eng. Works, W. Hartlepool)	Price about £70,000.
Kumi Maru, ss. (spar dk.) (ex *Nederland*)	4,093 gr. 2,538 net. 6,710 d.w.	345′ × 48½′ × 19½′ (25½′)	Denryu Kisen Goshi Kaisha, Dairen, to buyers not stated	Sir Raylton Dixon & Co., Middlesbrough (1902)	26, 42, 70 × 48 (Richardsons, Westgarth & Co., Middlesbrough)	Price about £76,500. Sold in Jan., 1913 for about £31,500.
Mariteres, ss. (pt. awning dk.) (ex *Cauwell*, ex *Spoongwell*)	3,030 gr. 1,943 net. 4,610 d.w.	322′ × 41½′ × 21½′ (22½)	F. Echevarria, Bilbao, to Norwegian buyers	J. L. Thompson & Sons, Sunderland (1891)	23½, 38, 62 × 42 (J. Dickinson & Sons (Sunderland)	Price about £50,000.
Östergöland, ss. (ex *Dos de Abril*, ex *Östergötland*)	1,109 gr. 658 net. 1,800 d.w.	225′ × 34½′ × 15½′	Rederiaktieb Ostergötland (S. I. Horndahl), Norrköping, to Consul Johs., Lindvig, Kragero	Howaldtswerke, Kiel (1904)	16½, 27½, 43½ × 24½ (Howaldtswerke, Kiel)	
Peveril, ss. (well dk.) (ex *Carina*)	1,687 gr. 1,047 net. 2,330 d.w.	257½′ × 34½′ × 18′	Maclay & McIntyre, Glasgow, to C. A. Stewart & Co., London	M. Pearse & Co., Stockton (1882)	32, 60 × 39 (Blair & Co., Stockton)	Price about £19,000.
Saint Kentigern, ss.	4,411 gr. 2,831 net. 7,200 d.w.	375½′ × 52½′ × 25½′	A. Mackay & Co., Glasgow, to British buyers	Greenock & Grangemouth Dock Co., Greenock (1914)	25, 41, 68 × 48 (Rankin & Blackmore, Greenock)	Price about £108,000.
Shinsei Maru, ss. (ex *Buccania*, ex *Monmouth*, ex. *Fitzpatrick*)	4,205 gr. 3,108 net. 6,610 d.w.	365′ × 47′ × 27′ (24¼′)	M. Naruse, Nishinomiya, to buyers not stated	Tyne Iron S.B. Co., Newcastle (1896)	27, 43, 72 × 45 (N.E. Mar. Eng. Co., Newcastle)	Price about £59,000.
Sigurd, s.v. ..	1,586 gr. 1,499 net.	251½′ × 38¾′ × 21½′ (19½′)	Act. "Sigurd" (A. Aase), Sandnes, to Stavanger buyers	Russell & Co., Pt. Glasgow (1892)	—	Price about 270,000 kr.
Siva, ss. ..	1,740 gr. 912 net. 2,565 d.w.	270½′ × 37′ × 18½′ (17½′)	J. T. Salvesen & Co., Grangemouth, to Crosby, Ker & Co., Liverpool	Grangemouth & Greenock Dockyard Co., Grangemouth	21½, 35, 57 × 39 (S. & H. Morton & Co., Leith)	Price about £25,000.
Thyra, ss. (well dk.) (ex *Packlands*)	1,664 gr. 986 net.	256½′ × 34½′ × 19½′ (19½′)	Rederiaktieb. Bredablick (C. G. Thulin), Stockholm, to S. I. Horndahl, Norrköping	W. Gray & Co., W. Hartlepool (1889)	33, 61 × 33 (T. Richardson & Sons, Hartlepool)	—
Vorma, ss. (ex *John Christie*)	1,565 gr. 974 net. 2,510 d.w.	259½′ × 36½′ × 18′ (17½′)	Actie. Hafa (W. Gorrissen), Christiania, to L. Harboe Jensen, Christiania, and resold to Ellingsen & Johannesen, Bergen	Short Bros., Sunderland (1896)	19, 31, 51 × 36 (W. Allan & Co., Sunderland)	Price about £43,500.
Vulcan, ss. (well dk.) (ex *Gulf of Akaba*)	1,997 gr. 1,256 net. 2,750 d.w.	275′ × 37½′ × 19′ (20½′)	Dpsk. Vulcan (N. P. Nielsen), Copenhagen to Steamship Co., Orion, Copenhagen	R. Dixon & Co., Middlesbrough (1883)	35½, 64 × 42 (Blair & Co., Stockton)	

A report has gained currency that the ss. *Indiana* has been sold. This is denied by the owners, Furness, Withy & Co.

SHIPPING SHARE MARKET.

The stock markets continue to be busy in respect to securities of all companies whose profits are likely to be influenced by the exceptional activity in shipping. For a few days last week the number of transactions almost reached "boom" dimensions. Royal Mails which we had long since anticipated would again reach par, even passed this quotation, but have since fallen back on a proportion of investors who had bought at last summer's depressed figure having decided to take their profits. It is very unlikely, however, that the quotation will again be allowed to relapse. Cunard also received an additional amount of support, although present conditions are not so favourable to high profits in the case of this company, and the same remark applies to the Peninsular & Oriental. Both are doing well from the point of view of the stockholder, but the profits of high-class passenger lines are not advancing in the same proportion as those of cargo or cargo-cum-passenger lines. The British India Steam Navigation accounts have been issued during the week and exhibit excellent results from which P. and O. shareholders will benefit. The debentures have been dealt in and on Friday changed hands at 96. The report of the Khedivial Mail Steamship Company was also received by the market on the same day and a bargain was "marked" in the ordinary shares at 10s. 3d. which is a small improvement on the previous bargain recorded on December 1 at 9s. 6d. The year's accounts show a net profit of £19,730, and the ordinary shareholders will receive a dividend of 5 per cent. This is satisfactory seeing that during the major portion of the financial year the greater part of the company's regular services had to be suspended owing to the state of war with Turkey. Among other shares in which there has been encouraging business during the past week are Furness Withy ordinary, Court Lines, Leyland preference, Lamport & Holt preference and Ellerman Lines preference.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING AND DOCKS.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. % or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week.
	£					
African S.S.	20	21⅝—19 1/16	7	7	18—20	18—20
Allan Line ... ... Deb.	100	95—89	4	4 1/4	93 1/2—95 1/2	94
Anchor Line ... Cum. pref.	10	10 1/8—10	5 5/8	5 5/8	10—10 1/8	10 3/8
Do. ... ... Deb.	Stk.	98 1/2—98 3/8	4 1/2	4 5/8	104—106	102 1/2
Argentine Nav. ... Cum. pref.	1	29/6—25/3	3	4 1/8	1 1/16—1 1/8	1
Do. ... ... Deb.	Bds.	104 1/8—100 1/4	6	6 1/8	98—100	98
Australasian Un. S. Nav. Deb.	Stk.	84 1/2—81 1/2	4	4 1/16	80—83	82 1/8
Belfast Steam ... ... "A"	10 (5pd.)	5 1/2—4 1/2	5	5	4 1/4—5 1/4	5
British & African Nav. ... Deb.	Stk.	102—101	4 1/2	4 3/8	96 1/2—98 1/2	99 1/2
British India Nav. ... Deb.	Stk.	104—98 1/2	4 1/2	4 1/2	99 1/2—100	98
Bucknall SS. ... Cum. pref.	2	2 1/8—1 1/2	5 1/2	—	—	—
Cairn Line ... ... Deb.	Bds.	102—94	5	5 1/16	91—93	99 1/2
Clan Line ... ... Ord.	10	14 2—9	15	10 1/8	10 1/8—11	—
Court Line ... ... Ord.	£1	—10	15	7 1/2	—	1 5/8
Cunard SS. ... ... Ord.	1	35/9—28/—	20	6 1/2	1 1/2—1 1/2	3/8
Do. ... Cum. pref.	Stk.	103—97 1/2	5	5 1/2	99—101	91
Do. ... ... Deb.	Stk.	102 1/8—99	4 1/2	4 1/2	101—103	96 1/2
Elder Line ... ... Deb.	Stk.	103—100	4 1/2	5	98—102	90
Elder Dempster ... Cum. pref.	1	1 3/8—1 1/8	5 1/2	5 1/16	1 1/8—1 1/4	1 1/16
Do. ... ... Deb.	Stk.	105—99 1/2	5	5 1/2	102—104	91 1/2
Ellerman Lines ... Pref. Ord.	10	10 1/8—10 7/8	6 1/2	6	10—10 1/2	9 1/2
Do. ... Cum. pref.	10	10 1/4—10 1/16	4 1/2	4 3/8	10—10 1/2	9 1/2
France Fenwick ... Cum. pref.	5	97/6—92/6	5 1/2	6 1/2	4 1/2—5	4 1/2
Furness, Withy ... Ord.	1	34/3—25/6	10	6 1/2	1 1/4—1 1/2	1 1/16
Do. ... Cum. pref.	10	9 1/2—9 1/4	5	5 1/8	9 1/2—10	8 1/16
General Steam Nav. ... Ord.	7 1/2	6 1/8—5 1/2	6	7	5 1/2—5 1/2	6 1/2
Do. ... ... Pref.	8	7 1/4—7 1/8	6	7 1/2	7 1/4—7 1/2	6 1/2
Houlder Line ... Cum. pref.	5	85/—80/—	Nil.	Nil.	2 1/2—2 1/2	3 1/2
Do. ... ... Deb.	Stk.	84 1/2—80	4 1/2	5 1/4	81—86	84 1/2
Houlder Bros. ... Cum. pref.	5	4 1/2—3	5 1/2	5 3/8	4 1/8—4 1/2	4 1/4
Do. ... ... Deb.	Stk.	85—78	4 1/2	5 1/2	81—86	82
India Gen. Nav. & Rly. ... Ord.	10	9 1/2—7 1/16	6	7 1/16	9—10	8 1/8
Indo-China N. ... Pref. Ord.	5	5 1/8—87/6	6	5 1/4	3 1/2—4 1/2	5 1/8
Irrawaddy Flotilla	40	125—114	15	5 1/16	126 1/2—128 1/2	—
King Line ... ... Ord.	10	9 1/16—8	8	6 1/4	8 1/2—9 1/2	12 1/2
La Guaira Harbour ... Deb.	Stk.	87—79	5	7 1/16	78—80	65 1/2
Lamport & Holt ... Cum. pref.	£1	1 1/4—2 1/8	6	6	1 1/8—1 1/16	3 1/16
Leyland (F.) ... Cum. pref.	10	11—9 1/8	30	—	7 1/2—8 1/2	7 1/8
Do. ... ... Deb.	100	99 1/2—95 1/8	4	4	99—101	—
Mercantile SS. ... ... Ord.	5	8 1/4—6 1/2	17 1/2	8 1/2	6—6 1/2	10 1/2
Do. ... ... Pref.	1	1 3/16—16/3	5	5 1/4	1—1 1/16	1 1/16
Moor Line ... ... Ord.	10	14—11 1/2	15	—	—	—
Nelson Steam Nav. ... Deb.	100	103 1/2—99	5	5 1/2	99 1/2—101 1/2	98
New Zealand ... ... Ord.	£10	20 1/2—10 1/8	8	4 1/2	14 1/2—15 1/2	19 1/2
Do. ... ... Deb.	Stk.	95—92 1/2	4	4 1/2	92—94	89 1/2
Nitrate Producers SS. ... Ord.	5	8 1/8—8	17 1/2	5 1/4	8—8 1/2	15 1/2
Do. ... Cum. pref.	5	5—97/6	5	5	4 1/2—5	4 1/8—5
Oceanic Steam. Nav. ... Deb.	100	100—96 1/2	4 1/2	4 1/2	97—99	98 1/2
Orient.Stm.Nav.Co. Cum. pref.	10	10 1/8—9 1/8	5	5 1/16	9 1/8—10	9 1/16
Do. ... ... Deb.	100	99—94 1/2	4 1/2	4 1/8	98—100	96 1/2
P. & O. S. N. ... Cum pref.	100	125 1/2—107	5	5 1/2	109—112	96 1/2
Do. ... ... Def.	100	350—270	15	4 1/16	270—290	288 1/2
Do. ... ... Deb.	Stk.	91—83	3 1/2	5	84—86	70 1/2
Prince Line	1	25/3—20/—	5	5	1—1 1/8	—
R.M.S.P. ... ... Ord.	100	143—100 1/2	Nil.	Nil.	82—87	100
Do. ... ... Pref.	Stk.	100 7/8—96	5	5 1/2	98—101	86
Do. ... ... Deb.	Stk.	104 1/2—100 1/2	4 1/2	5 1/2	101—103	89
Shaw, Savill & Alb. Cum. pref.	5	5 1/8—96 3	5	5	4 1/2—5	4 1/2—5
Shell Transport ... ... Ord.	1	5 1/4—96 10 1/2	30	6 1/2	4—4 1/4	4 1/2
Do. ... Cum pref.	10	11 1/8—10	5	5 1/16	10 1/8—10 1/2	9 1/2
Sutherland SS. Co.	£1	1 1/4—1	20	13 1/2	1—1 1/8	1 1/8
Union-Castle SS. Cum. pref.	10	10—9 1/2	4 1/2	5	8 1/2—9 1/2	8
Do. ... ... Deb.	Stk.	95 1/2—92	4	4 1/8	93—95	88 1/2
West Hartlepool ... ... Pref.	10	4 1/2—31 1/2	5 1/2	9 1/2	2 1/8—3 1/8	5 1/16

INSURANCE.

Alliance	20 (2'4 pd.)	12 1/4—11 1/8	12/-	6 1/16	11 1/4—12 1/8	9 1/16
Do. (new shares)	1	14 1/16—12 1/8	12/-	5 1/8	13 1/16—14 1/8	10 1/2
Indem. Mutual Marine ...	15 (3 pd.)	10 1/4—8 1/8	18 1/2	8 1/16	10—11	9 1/8
London Assurance	25 (12½ pd.)	54—49	20	6	54—56	42 1/2
Marine Insurance	25 (15 pd.)	38 1/2—36 1/2	45/-	6 1/8	38 1/2—39 1/2	35 1/4
Maritime Insurance	10 (2 pd.)	5 1/8—4 1/2	12 1/2	—	5 1/16—5 1/2	—
Merchants' Marine Insurance ...	10 (2½ pd.)	66 3—61/3	7 1/2	5	4—4 1/2	3 7/16
N. British & Mercantile Ord.	25 (6½ pd.)	40 1/2—38 1/2	40/-	7	40 1/2—41 1/2	29 1/16
Do. Pref.	Stk.	100 1/2—93 1/2	4	5 1/2	98—100	77 1/2
Phœnix Assurance	10 (1 pd.)	7 1/8—7	40	6 1/2	7 1/4—8 1/4	5 1/4
Reliance Marine	10 (2 pd.)	7—6 1/2	17 1/2	5 1/2	7 1/8—7 1/2	6
Royal Exchange Assurance ...	Stk.	210—196 1/2	10	5 1/8	213—218	183
Sea Insurance	10 (2 pd.)	20—17 1/2	8	3 1/2	20—21	20 1/16
World Marine, Limited ...	5 (2 pd.)	25/—23/1 1/2	5	5 1/2	1 1/16—1 1/8	1 1/16

* With arrears. † Includes 2½% bonus.

IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1913.	Last ann. div. % or per share.	Yield. %	Quotation, July 30, 1914.	Cash price during week
	£					
Babcock & Wilcox ... ... Ord.	1	69 1/4—56/3	14	6 1/2	2 1/8—2 1/4	2 1/16
Baldwins ... ... Cum. pref.	1	22/6—21/3	5 1/2	5 1/16	1 1/16—1 1/8	1 1/16
Do. ... ... Deb.	Stk.	100 1/4—100 1/4	4 1/2	4 1/2	97—99	98
Bayliss, Jones ... Cum. pref.	1	—	5	7 1/2	3/8—3/8	1 1/16
Bell Bros. ... ... Cum. pref.	10	12 1/8—11	6	5 1/16	11 1/8—12 1/8	10 1/2
Do. ... ... Deb.	Stk.	98—96 1/2	4	4 1/16	96—98	96—98
Bessemer (Henry) ... Ord.	1	1 1/8—1 1/16	10	8 1/16	1 1/8—1 1/8	1 1/16
Bolckow Vaughan ... Ord.	1	22/6—19/4 1/2	6	6 1/8	1 1/8—1 1/8	1 1/16
Do. ... ... Cum. pref.	20	21 1/2—20/—	5	5 1/8	20—21	19 1/2
Cargo Fleet Iron ... ... Ord.	1	11/10 1/2—7/6	2 1/2	5	1 1/16—1 1/8	1
Do. ... ... Deb.	100	91—85 1/2	4 1/2	5	89—92	89
Consett Iron Co. ... ... Ord.	1	88/6—74/6	12 1/2	4 1/2	3 1/2—3 1/2	2 1/16
Dominion Iron & Steel	Bds.	100 1/2—88 1/2	5	6 1/8	83—87	74 1/2
Dorman, Long ... ... Ord.	1	21/6—16/9	8	7	1 1/2—1 3/4	1 1/2
Do. ... ... Deb.	Stk.	88 1/2—85 1/2	4	4 1/2	87—90	84 1/2
Ebbw Vale Steel & Iron ... Ord.	1	18/—16/—	7 1/2	7 1/16	3/4—3/4	3/4
Guest, Keen & Nettefolds ... Ord.	1	68/9—61/3	15	5	3 1/16—3 1/8	3
Do. ... ... Cum. pref.	5	5 1/8—5 1/8	5	4 1/2	5 1/16—5 1/8	5 1/2
Do. ... ... Deb.	Stk.	100 1/2—95 1/2	4	4 1/16	96—98	80 1/2
Hadfield's Steel Foundry ... Ord.	1	63/—58/9	22 1/2	6 1/2	3—3 1/8	3 1/16
Hawthorn (R. & W.) Leslie ... Ord.	10	13—12	10	7 1/2	13 1/8—13 3/8	12 1/8—13 1/8
Ibbotson Bros. ... ... 5 (4 pd.)		7—5 1/2	7 1/2	7 1/2	5—6 1/2	6 1/2
Jessop (W.) & Sons ... Ord. 5 (4 pd.)		6 1/2—6 1/8	15	8 1/16	6 1/2—6 1/2	6 1/2
Lanarkshire Steel ... Cum. pref.	10	7 1/2—6 1/2	5	6 1/2	5 1/2—6 1/2	7 1/2
Lysaght (J.) ... Cum. pref.	1	27/6—25/—	6	5	1 1/16—1 1/8	1 1/2
Do. ... ... Deb.	Stk.	108 1/8—102 1/8	4 1/2	—	104—106	—
Manganese Bronze ... Ord.	1	3/8—3/8	6	11	3/8—3/8	3/8
Do. ... ... Cum. pref.	1	1 1/8—1	6	6 1/16	1—1	1 1/16
North-Eastern Steel ... Deb.	Stk.	89—92	4 1/2	—	—	—
Palmers Ship & Iron "A"	1	3/8—3/8	Nil.	Nil.	3/8—3/8	3/8
Scott (Walter) ... ... Ord.	1	16/—14/6	7 1/2	10 1/2	2 1/8—2 1/8	2 1/16
Do. ... ... Deb.	Stk.	86—82	4	4 1/16	81—82	86—91
Sheffield Forge ... ... Ord.	1	1 1/8—1 1/8	12 1/2	6 1/16	1 1/8—1 1/8	1 1/16
Shelton Iron & Steel ... Deb.	100	99 1/2—90	5	5 1/8	93—98xd	94 1/8
S. Durham Steel & Iron ... Ord.	1	35/—28/6	10	8	1 1/8—1 1/2	1 1/16
Do. ... ... Cum. pref.	1	20/6—19/—	6	5 1/16	1 1/16—1 1/8	1 1/16
Do. ... ... Deb.	Stk.	95—98	4 1/2	4 1/16	90—92	90—92
Steel Co. of Scotland ... Ord.	10	12 1/8—8 1/2	5	5 1/8	8 1/2—9	8 1/2—9 1/2
Stewarts & Lloyds ... Pref. ord.	10	21 1/8—20	10	5 1/8	20—21	19 1/2
Do. ... ... Cum. pref.	10	14 1/2—13 1/4	6	4 1/2	11 1/8—13 1/16	13 1/16
Do. (J.) ... ... Cum. pref.	10	9 1/8—8	5	5 1/8	8 1/2—9 1/2xd	9 1/16
United States Steel	100$	71 1/4—50	3	5 1/16	61—61 1/2	90 1/2
Do. ... ... Cum. pref.	100$	113 1/2—104 1/2	7	5 1/2	112—113	122 1/2
Vickers Ltd. ... ... Ord.	1	43/6—33/3	12 1/2	7 1/8	1 1/16—1 1/2	1 1/16
Do. ... ... Pref.	Stk.	106 1/2—99	5	5 1/8	104—107	92
Do. ... ... Deb.	Stk.	100 1/2—91 1/2	4	4 1/4	96 1/2—98 1/2	83 1/2
Weardale Steel ... Def. ord.	1	21 —17/—	6	7 1/8	3/8—1/2	3/8
Do. ... ... Cum. pref.	1	20/12—18/—	6	6 1/2	1 1/16—1 1/8	1 1/16
Do. ... ... Deb.	Stk.	77—73 1/2	4	5 1/2	77—80	77—80
Workington Iron & Steel Ord.	1	16/6—12/3	4	5 1/2	2 1/16—2 1/8	1 1/16

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth ... Ord.	1	60/—39/	12 1/2	6	1 1/16—2 1/16	1 1/2
Do. ... ... Cum. pref.	5	95/—84/6	4	5 1/2	4 1/16—4 1/8	3 1/16
Do. ... ... Deb.	Stk.	98 1/2—94 1/2	5	5 1/16	96—98	80 1/2
Beardmore (W.) ... ... Deb.	100	96 1/2—91 1/2	4 1/2	5	94—96	89
Brown (John) ... ... Ord.	1 (15s. pd.)	23/—17 9	12 1/2	9 1/2	3 1/16—3 1/8xd	3 1/16
Do. ... ... Cum. pref.	10	10 1/4—9 1/8	5	5 1/16	9 1/16—10xd	8 1/16
Cammell Laird ... ... Ord.	5	3 1/8—2 1/8	7 1/2	7 1/8	3 1/8—4 1/8	4 1/16
Do. ... ... Cum. pref.	5	92/6—79/—	5	6 1/2	4 1/4—4 1/2	3 1/16
Do. ... ... Deb.	100	90 1/8—84 1/2	4 1/2	5	92—94	90
Dunlop (Jas.) ... ... Ord.	1	18/6—17/6	Nil.	—	1 1/16—1 1/8	1 1/16
Do. ... ... Cum. pref.	1	1 1/8—7/8	6	7 1/8	7/8—1	1 1/16
Fairfield Shipbldg ... Cum. pref.	10	10—7 1/8	6	8 5/16	—	7 1/16
Fleming & Ferguson ... Ord.	10	20 1/2—12 1/2	10	7	14 1/2—14 1/2	14 1/2
Gray (Wm.) ... ... Deb.	100	100 1/8—100	4 1/2	4 1/2	100—102	100 1/2
Henderson (D. & W.) Cum. pref.	1	1 1/16—7/8	5	5 1/16	1 1/16—1 1/8	1 1/16
Richardsons Westgarth ... Ord.	1	3/6—1/9	Nil.	Nil.	1/8—1/8	1/16
Do. ... ... Cum. pref.	1	9/9—4/3	Nil.	Nil.	1/8—1/8	1/16
Do. ... ... Deb.	Stk.	70—58	4 1/2	6 1/2	58—68	69 1/2
Simons (W.) ... Cum. pref.	10	10 1/2—10	5	5	10 1/2—10 1/2	9 1/16
Stephenson (R.) ... ... Ord.	1	66 1/2—53	Nil.	Nil.	—	—
Do. ... ... Deb.	Stk.	66 1/2—63	Nil.	Nil.	—	—
Swan, Hunter & W. R. ... Ord.	1	19/10 1/2—16/—	†10	10 1/2	1 1/16—1	1 1/2
Do. ... ... Cum. pref.	1	1 9/9—17/9	5	5 1/8	1 1/16—1	1 1/16
Do. ... ... Deb.	Stk.	90 1/8—88	4 1/2	4 1/16	90—93	90—93
Thornycroft (John I.) ... Ord.	1	27/6—12/6	8	8	1 1/8—1 1/8	1 1/16
Do. ... ... Cum. pref.	1	19/3—11/3	6	7 1/8	1 1/16—1 1/8	1 1/16
Do. ... ... Deb.	100	94—91	5	5 1/16	88—92	92
Wallsend Slipway ... ... Ord.	1	1 1/8—1 1/8	10	—	1 1/8—1 1/8	—
Do. ... ... Cum. pref.	1	20/—20/—	5	—	1 1/16—1 1/16	—

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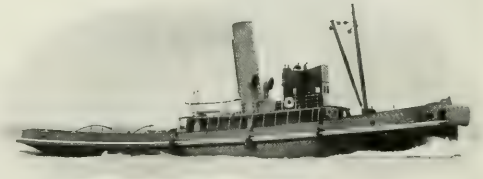

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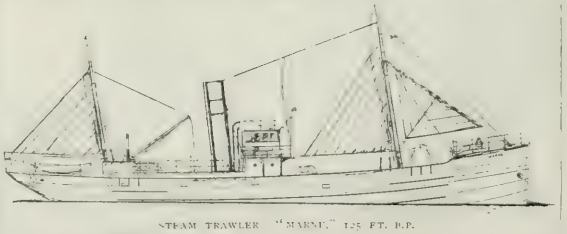

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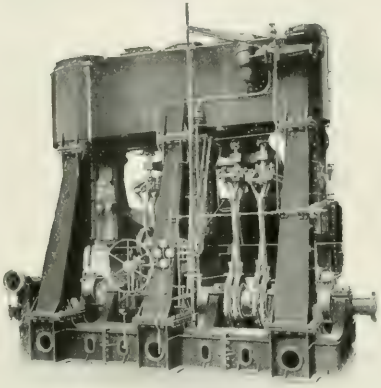

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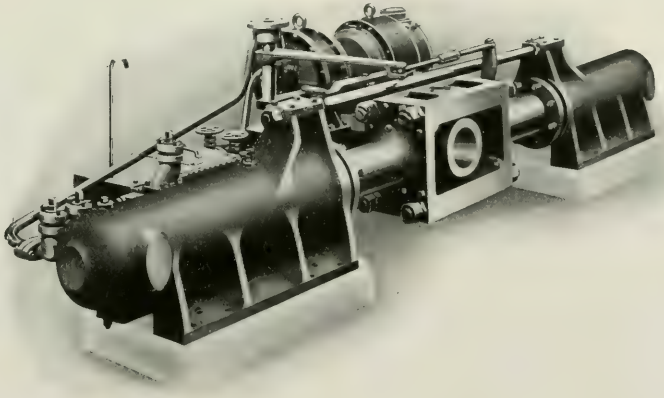

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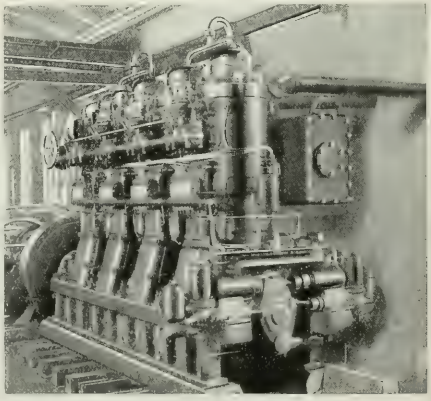

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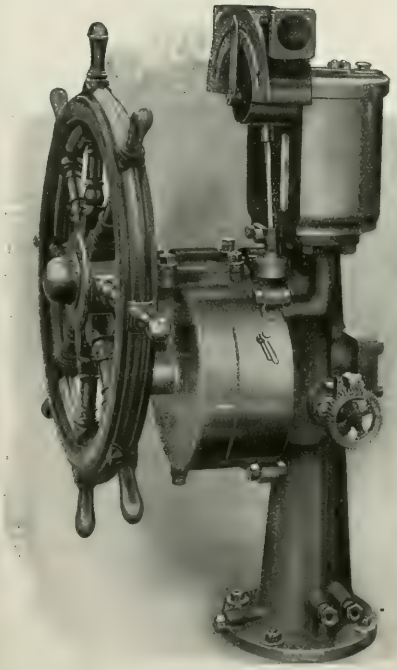

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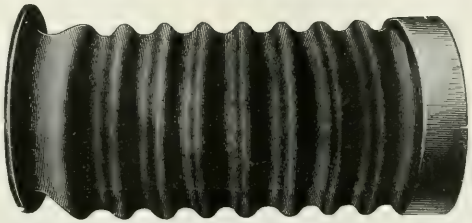

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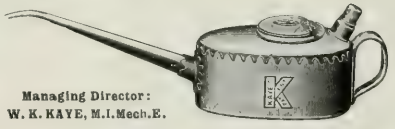

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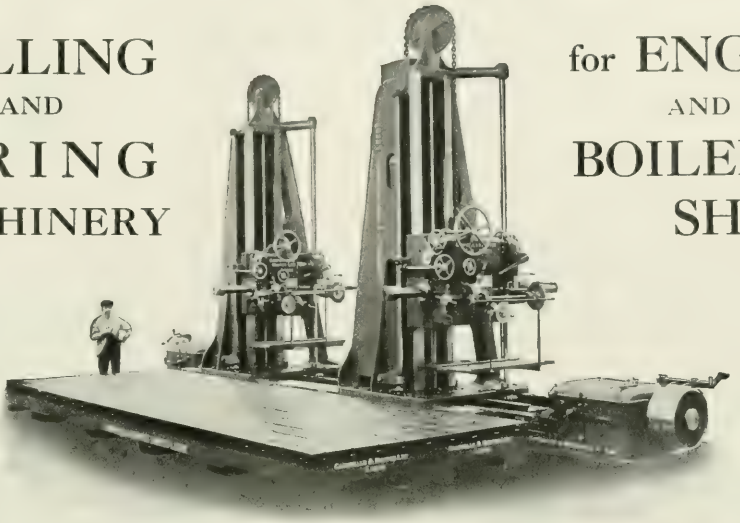

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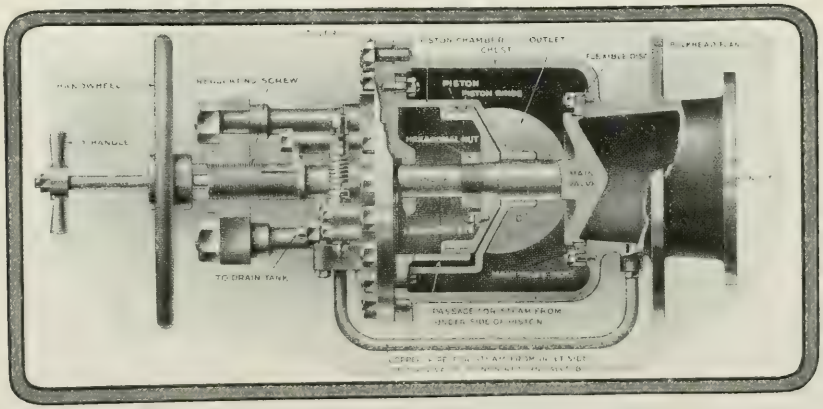

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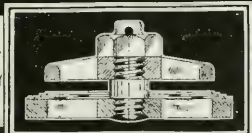

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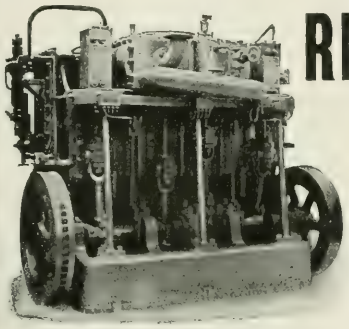

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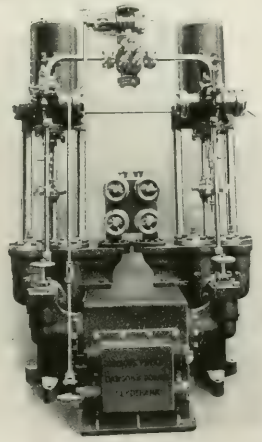

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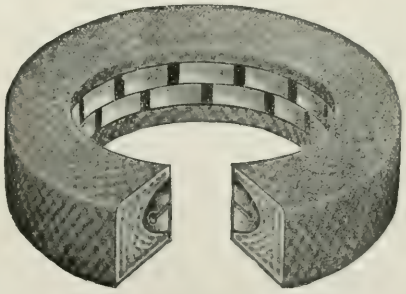

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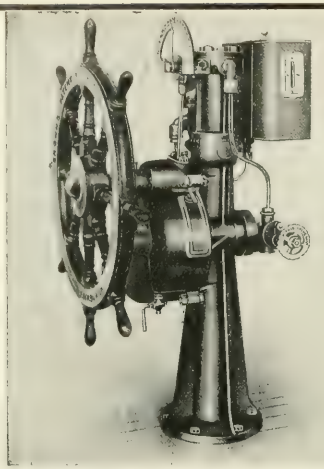

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CASE HARDENING COMPOSITION—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CASE HARDENING OIL—
Else, John, & Son, Ltd., 48, Muntz St., Birmingham

CAST BRASS PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

CASTINGS (Brass)—
Dixon, S., & Sons, Ltd., Leeds.

CASTINGS (Steel)—
Bayley, Thos., & Co., Vulcan Works, Sheffield and Chesterfield, Nr. Chesterfield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.
Stewarts & Lloyd's, Ltd., 41, Oswald St., Glasgow.

CASTINGS (Steel, Iron and Brass)—
Darlington Forge Co., Ltd., Darlington.
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McKenzie, John, & Sons, 94, Elliott Street, Glasgow.

CEMENT—
Aberthaw & Bristol Channel Portland Cement Co., Ltd., Merthyr House, Cardiff.

COAL—
Beynon, T., & Co., Ltd., Merthyr House, Cardiff.
Britannic Merthyr Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Cambrian Collieries, Ltd., Cambrian Bldgs., Cardiff.
Davis, D., & Sons, Ltd., Cymric Bldgs., Cardiff.
Ebbw Vale Steel, Iron & Coal Co., Ltd., Merthyr House, Cardiff.
Fernhill Collieries, Ltd., Merthyr House, Cardiff.
Glamorgan Coal Co., Ltd., Cambrian Bldgs., Cardiff.
Harrisons (London), Ltd., 66, Mark Lane, E.C.
Navar Colliery Co. (1297), Ltd., Cambrian Bldgs., Cardiff.
Newport Abercarn Black Vein Steam Coal Co., Ltd., Merthyr House, Cardiff.
Powell Duffryn Steam Coal Co., Ltd., Cardiff.
Rhymney Iron Co., Ltd., Merthyr House, Docks, Cardiff.

COAL HANDLING PLANT—
Spencer & Co., Ltd., Melksham, Wilts.

COMPASSES (Ship)—
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CONDENSERS—
Bellis & Morcom, Ltd., Birmingham.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Dawson & Downie, Elgin Works, Clydebank.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Royles, Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

CONDENSER TUBES (Brass and Copper)—
Yorkshire Copper Works, Ltd., Leeds.

CONTROLLERS & CONTROL GEAR—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
[on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Reyrolle, A., & Co., Ltd., Hebburn-on-Tyne.

CONVEYORS—
Mather & Platt, Ltd., Manchester.
Spencer & Co., Ltd., Melksham, Wilts.

COOKING APPARATUS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Grieve, T., & Sons, Bedford Street, North Shields.

COPPER PIPES—
Yorkshire Copper Works, Ltd., Leeds.

COPPERSMITHS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles Ltd., Irlam, Nr. Manchester.

COPPER TUBES—
Yorkshire Copper Works, Ltd., Leeds.

CORK INSULATION—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

CORRUGATED IRON—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

COUNTER (Engine)—
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.

CRANES—
Ransomes & Rapier, Ltd., 32, Victoria St., S.W.
Stothert & Pitt, Ltd., Bath.

CYLINDERS (Copper)—
Yorkshire Copper Works, Ltd., Leeds.

DELTA METAL—
Delta Metal Co., Delta Works, East Greenwich, S.E.

DERRICKS & DAVITS—
Howden, James, & Co., Ltd., 95, Scotland Street, Glasgow.
Stewarts & Lloyds, Ltd., 41, Oswald St., Glasgow.

DISTILLING APPARATUS—
Royles Ltd., Irlam, Nr. Manchester.

DIVING APPARATUS—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, S.E.
Mining Engineering Co., Ltd., Meco Works, Moorfields, Sheffield.

DOCK & SHIP LIGHTING—
Carbic Ltd., 51, Holborn Viaduct, London, E.C.

DOCK GATES—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Hamilton, Wm., & Co., Ltd., Port Glasgow, Scotland.
Swan, Hunter & Wigham Richardson, Ltd. Wallsend-on-Tyne.

BUYERS' GUIDE—*continued.*

DOORS (Watertight)—
Frank Hemmer Harrison Co., Ltd., Rugby.
Stone, J., & Co., Ltd., Deptford, S.E.

DREDGE PLANTS
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow. [Glasgow.
Simons, Wm., & Co., Ltd., Renfrew, Nr. Glasgow.

DREDGING—
Tilbury Contracting & Dredging Co., Ltd., Queen Anne's Chambers, Westminster, London, S.W.

DRILLING MACHINES—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

DRILLS—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

DRILLS (Pneumatic and Electric)—
United States Metallic Packing Co., Ltd., Bradford.

DRY FITTINGS (Laundry)—
Bradford, T., & Co., Salford, Manchester.

DYNAMOS
Allen, W. H., Son & Co., Ltd , Queen's Engineering Works, Bedford.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.

ELECTRIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [Edinburgh.
Mactaggart, Scott & Co., Ltd., Loanhead, Mather & Platt, Ltd., Manchester.
Ransomes & Rapier, Ltd., 32, Victoria Street, London, S.W.
Stothert & Pitt, Ltd., Bath.

ELECTRIC DERRICKS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRIC DYNAMOS & MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC FITTINGS—
Durham, Churchill & Co., Grimesthorpe, Sheffield.

ELECTRIC HEATING & COOKING APPARATUS—
British Thomson-Houston Co., Ltd., Rugby.
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.

ELECTRIC LAMPS—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Machester.
McGeoch, Wm., & Co., Ltd., 28, West Campbell Street, Glasgow.

ELECTRIC LIGHTING—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC LIGHTING PLANT—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC MOTORS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRIC WIRES—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.

ELECTRICAL CONTRACTORS—
Holmes, J. H., & Co., Portland Road, Newcastle-on-Tyne.
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow. [Glasgow.
Martin, W. C., & Co., 10, West Campbell Street,
Mather & Platt, Ltd., Manchester.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL ENGINEERS—
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Chadburn's (Ship) Telegraph Co., Ltd., Cyprus Road, Bootle, Lancs.
Graham, Alfred, St. Andrew's Works, Crofton Park Road, S.E.
Holmes, J. H., & Co., Portland Road, Newcastle-
Mather & Platt, Ltd., Manchester. [on-Tyne.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

ELECTRICAL INSTRUMENTS (Ammeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

ELECTRICAL INSTRUMENTS (Circuit Breakers)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

ELECTRICAL INSTRUMENTS (Relays)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

ELECTRICAL INSTRUMENTS (Voltmeters)—
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester. [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

EMERY WHEELS—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow.

ENAMEL MANUFACTURERS—
Holmpfels, Ltd., Newcastle-on-Tyne.
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.
Websters Ltd., Hull.

ENGINE (Electric Light)—
Belliss & Morcom, Ltd., Birmingham.
Greenwood & Batley, Ltd., Albion Works, Leeds.

ENGINES (Marine)—
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Central Marine Engine Works, West Hartlepool.
Fair, Walter D., & Co., 43, Leicester Square, London, W.C.
Hawthorn, R. W., Leslie & Co., Ltd., St. Peter's, Newcastle-on-Tyne.
Howden, James, & Co., Ltd., Scotland St., Glasgow.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

ENGINE & DECK STORES—
McGeoch, Wm. & Co., Ltd., 28, West Campbell Street, Glasgow.
Metallic Valve Co., Colonial House, Water Street, Liverpool.

ENGINE AUXILIARIES—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

ENGINE FITTINGS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

ENGINE-ROOM OUTFITS—
Grieve, T., & Sons, Bedford Street, North Shields.

ENGRAVERS—
Brown, Robert, & Co., 12, Espedair St., Paisley.

EVAPORATORS—
Central Marine Engine Works, West Hartlepool.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Royles, Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

EXTRUDED METALS (Brass, Bronze, Copper, Delta Metals)—
Delta Metal Co., Ltd., E. Greenwich, London, S.E.

FANS—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow.
Allen, W. H., Son & Co., Ltd., Queen's Engineering Works, Bedford.
Boothroyd, H. T., Ltd., Bootle, Liverpool.
British Thomson-Houston Co., Ltd., Rugby.
British Westinghouse Electric & Mfg., Co., Ltd., Trafford Park, Manchester. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Hogan & Wardrop, 2, Gresham Buildings, Basinghall Street, London, E.C.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C

FEED-WATER HEATERS—
Beresford Eng'n'ring Co., Beresford Lane, Cardiff.
Central Marine Engine Works, West Hartlepool.
Richardsons, Westgarth & Co., Ltd., Hartlepool.
Royles, Ltd., Irlam, Nr. Manchester.
Weir, G. & J., Ltd., Cathcart, Glasgow.

FILES—
Brown, John, & Co., Atlas Works, Sheffield.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FILTERS (Marine)—
Central Marine Engine Works, West Hartlepool.
Cockburns, Ltd., Cardonald, Nr. Glasgow.
Mather & Platt, Ltd., Manchester.

FIREBARS—
Liverpool Patents Co., Ltd., Derby Square, James Street, Liverpool.

FIRE EXTINGUISHERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Mather & Platt, Ltd., Manchester.

FIRE-FIGHTING APPLIANCES—
Mining Engineering Co., Ltd., Meco Works, Sheffield.

FLAGS—
Speedings, Ltd., Sail Works, Sunderland.

FLOATING DOCKS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow. [Scotland.
Hamilton, Wm., & Co., Ltd., Port Glasgow,
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne.

FLOOR COVERING—
Docker Bros., Ltd., Metropolitan Road, Saltley, Birmingham.

FORCED DRAUGHT—
Adam, J. M., & Co., Greenfield Iron Works, Dalmarnock, Glasgow. [Belfast.
Davidson & Co., Ltd., Sirocco Engineering Works,
Howden, J., & Co., Ltd., Scotland Street, Glasgow.
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

FORGING PRESSES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

FORGINGS—
Brown, John & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Hingley & Sons, Ltd., Netherton Iron Works, Staffs.
Sunderland Forge & Engineering Co., Ltd., Sunderland.

FORGINGS (Bronze)—
Delta Metal Co., Delta Works, East Greenwich, London, S.E.

FORGINGS (Steel)—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Darlington Forge Co., Ltd., Darlington.
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

FUMIGATORS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.

FURNACE BRIDGES—
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.
McConwell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.

FURNACES—
Brown, John, & Co., Ltd., Atlas Works, Sheffield.
Deighton's Patent Flue & Tube Co., Ltd., Vulcan Works, Pepper Road, Leeds.
Leeds Forge Co., Ltd., Leeds.
Piggott, T., & Co., Ltd., Birmingham.

GALLEY GEAR—
Grieve, T., & Sons, Bedford Street, North Shields.

GALVANIZERS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

GAS ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Mather & Platt, Ltd., Manchester.

GAUGES—
Chatwin, Thos., Ltd., Gt. Tindal St., Birmingham.

GEAR CUTTING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.

GEARING—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds

GEARS—
Spencer, John, & Sons, Ltd., Newburn-on-Tyne.

GEARS (Noiseless or Silent)—
British Thomson-Houston Co., Ltd., Rugby.
Brown, David, & Sons (Hfd.), Ltd., Huddersfield.

GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street, Liverpool.

GRAIN DISCHARGING PLANT—
Spencer & Co., Ltd , Melksham Wilts.

GRINDING MACHINES—
Greenwood & Batley, Ltd., Albion Works, Leeds.

GRINDING WHEEL MACHINES—
Sterne, L., & Co., Ltd., Crown Iron Works, Glasgow

HATCH COVERS (Patent)—
Hogg-Carr Construction Co., Ltd., Newcastle-on-Tyne.

HEATING APPARATUS—
Royles, Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HEATING ENGINEERS—
Low, Archibald, & Sons, Ltd., 78, Merkland Street, Partick, Glasgow.
Royles, Ltd., Irlam, Nr. Manchester.
Saunders & Taylor, Ltd., 43, Lower Mosley Street, Manchester.

HELM SIGNAL TELEMOTORS—
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh.

HIGH SPEED DRILLS—
Brown, John, & Co., Atlas Works, Sheffield.

HIGH SPEED STEEL—
Brown, John, & Co., Atlas Works, Sheffield.

HOISTS—
Mather & Platt, Ltd., Manchester.
Stothert & Pitt, Ltd., Bath.
Waygood-Otis, Ltd., Falmouth Road, S.E.

BUYERS' GUIDE—*continued.*

HOSE—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London, S.E.

HYDRAULIC CRANES—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Brown Brothers & Co., Ltd., Rosebank Iron Works, Edinburgh.
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh

HYDRAULIC MACHINERY—
Berry, Henry, & Co., Ltd., Croydon Works, Leeds.
Waygood-Otis, Ltd., Falmouth Road, S.E.

HYDRANTS—
McRobie, John, & Sons, 94, Elliott Street, Cranstonhill, Glasgow.

INDIARUBBER—
Heinke, C. E., & Co., 88, 89, Grange Road, Bermondsey, London S.E.

INDICATORS—
Robinson, A., & Co., Ltd., Bootle, Liverpool.

INDUCED DRAUGHT—
Davidson & Co., Ltd., Sirocco Eng'n'g Wrks, Belfast
Keith, James, & Blackman Co., Ltd., 27, Farringdon Avenue, London, E.C.

INSULATIONS—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W. [Liverpool.
Liverpool Refrigeration Co., Ltd., Colonial House,

IRON ROOFS AND BUILDINGS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.

JOINTING MATERIAL (Manganesite)—
Hudson & Co.'s Successors, John, 15, Victoria Warehouses, Mansell Street, E.C.

LAMPS AND LIGHTS—
Grieve, T., & Sons, Bedford Street, North Shields.
Kaye, Joseph, & Sons, Ltd., Leeds.

LAUNCHES—
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
MacLaren Bros., Ltd., Dumbarton.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
Watson, J. S., Gainsborough.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

LAUNDRY MACHINERY—
Bradford, T., & Co., Salford, Manchester.

LAVATORY FITTINGS AND APPLIANCES—
Levick, John, Alma Street, Aston, Birmingham.

LEAD (Sheets and Pipes)—
Rimer Bros., Newcastle-on-Tyne.

LEAD (White and Red)—
Rimer Bros., Newcastle-on-Tyne.

LIFEBELTS AND BUOYS—
Speedings Ltd., Sail Works, Sunderland.

LIFTS (Window)—
Laycock, W. S., Ltd., Victoria Works, Millhouses, Sheffield.

LIFTS AND HOISTS—
Mactaggart, Scott & Co., Ltd., Loanhead, Edinburgh
Waygood-Otis, Ltd., Falmouth Road, S.E.

LIGHTERAGE—
Alexander, W. H. J., St. John's Wharf, Wapping, E.

LIGHTERS—
Chalmers, Wm., & Co., Ltd., Rutherglen, Nr. Glasgow.
Crichton, J., & Co., Saltney Shipyard, Chester.
Watson, J. S., Gainsborough.

LIMEWASHING & DISINFECTING MACHINES—
Stonehouse Works Co., Ltd., Houghton Street, West Bromwich.

LOCKS—
Kaye, Joseph, & Sons, Ltd., Leeds.

LOCOMOTIVE TUBES (Copper & Brass)—
Yorkshire Copper Works, Ltd., Leeds.

LUBRICATORS— [Cranstonhill, Glasgow.
McRobie, John, & Sons, 94, Elliott Street,

MACHINE TOOLS—
Campbells & Hunter, Ltd., Dolphin Foundry, Leeds.
Greenwood & Batley, Ltd., Albion Works, Leeds.
Scriven & Co., Leeds Old Foundry, Leeds.

MACHINERY NAME PLATES—
Brown, Robert, & Co., 12, Espedair St., Paisley.

MAGNESIA—
Jones, Fredk., & Co., Ltd., Perren Street, Kentish Town, N.W.

MARINE ENGINEERS—
Bailey, C. H., Newport, Mon. Barry Docks.
Barry Graving Dock & Engineering Co., Ltd., Brown, John, & Co., Ltd., Clydebank, Nr. Glasgow.
Crichton, C. & H., Ltd., Huskisson Engine Works, Liverpool. [Southampton.
Day, Summers & Co., Ltd., Northam Ironworks,
Diamond, Thos., & Co., Cardiff.
Doxford, Wm., & Sons, Ltd., Sunderland.
Elliott & Jeffery, East Dock, Cardiff.
Gray, Wm., & Co., Ltd., West Hartlepool.
Harland & Wolff, Ltd., Belfast.
Harris Bros., Ltd., Cambrian Dry Docks, Swansea.
Hawthorn, R. & W., Leslie & Co., Ltd., Hebburn-on-Tyne.
Hill's Dry Docks & Engineering Co., Ltd., Cardiff.

MARINE ENGINEERS *(cont'd)*—
Livingstone & Cooper, Ltd., Hessle, Hull.
Mount-stuart Dry Docks, Ltd., Cardiff.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Richardsons, Westgarth & Co., Ltd., Hartlepool, Middlesbrough and Sunderland.
Shearman, John, & Co., Ltd., Cardiff.
Simons, Wm., & Co., Ltd., Renfrew, Nr. Scotland.
Stephen, Alex., & Sons, Ltd., Linthouse, Govan, Glasgow.
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne. [Westminster, S.W.
Thornycroft, John I., & Co., Ltd., Caxton House,
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.
Workman Clark & Co., Ltd., Belfast.
Yarrow & Co., Ltd., Chiswick.

MARINE GOVERNORS—
Aspinall's Patent Governor Co., 7, Strand Street,

MARKING-OFF TABLES— Liverpool.
Cowan, J. & Sons, Ltd., Dolphin Foundry, Leeds.

MATTRESSES—
Stewart, Archibald, & Co., 40-48, Union St., Glasgow

METALLIC PACKING—
Aston Chain & Hook Co., Ltd., Erdington, Birmingham.
Beldam Packing & Rubber Co., Ltd., 1 and 2, Gracechurch Street, London, E.C.
McConnell, A., & Co., Ltd., 60, Drury Buildings, Water Street, Liverpool.
United States Metallic Packing Co., Ltd., Bradford

METAL SPINNINGS—
Levick, John, Alma Street, Aston, Birmingham.

METALS (Patent)—
Bowran, Robt., & Co., Ltd., Newcastle-on-Tyne.
Delta Metal Co., Ltd., Delta Works, East Greenwich.

MOTOR BOATS—
Crichton, J., & Co., Saltney Shipyard, Chester.
Leitch, John, & Co., The Ferry, Renfrew, Scotland.
Livingstone & Cooper, Ltd., Hessle, Hull.
MacLaren Bros., Ltd., Dumbarton.
Perman & Co., Ltd., 82-83, Fenchurch St., E.C.
Seamless Steel Boat Co., Ltd., Wakefield.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, London, S.W.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

MOTOR STARTING AND CONTROL GEAR— [on-Tyne.
Holmes, J. H., & Co., Portland Road, Newcastle-

NAVAL ARCHITECTS' SUPPLIES—
Walker, Jas., & Co., 11, Bishop Court, Anderston, Glasgow.

OIL CANS—
Kaye, Joseph, & Sons, Ltd., Leeds.

OIL ECONOMISERS—
Kaye, Joseph, & Sons, Ltd., Leeds.

OIL ENGINES—
British Westinghouse Electric & Mfg. Co., Ltd., Trafford Park, Manchester.
Edina Manufacturing Co., 19b, Broad Wynd, Leith.
Fair, Walter D., & Co., 43, Leicester Square, London, W.C.
Perman & Co., Ltd., 82-83, Fenchurch Street, E.C.
Swan, Hunter & Wigham Richardson, Ltd., Wallsend-on-Tyne.
Thornycroft, John I., & Co., Ltd., Caxton House, Westminster, S.W.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

OIL-FUEL INSTALLATION—
Wallsend Slipway & Engineering Co., Ltd., Wallsend-on-Tyne.
White, J. Samuel, & Co., Ltd., East Cowes, I.W.

OIL IMPORTERS & BLENDERS—
Rimer Bros., Newcastle-on-Tyne.

PACKING (Engine)—
Beldam Packing & Rubber Co., Ltd., 1 and 2, Gracechurch Street, London, E.C.
Walker, Jas., & Co., Ltd., Lion Works, Garford Street, West India Dock Road, E.

PAINTS—
Briggs, W., & Sons, Ltd., Dundee.
Cocks, Harry, & Co., Cardiff.
Hamilton, Archd., & Co., Possilpark, Glasgow.
Hoyle, Robson, Barnett, & Co., Ltd., St. Nicholas Chambers, Newcastle-on-Tyne.
Wailes Dove Bitumastic Ltd., 5, St. Nicholas Buildings, Newcastle-on-Tyne.
Websters Ltd., Hull.

PANELLING—
Stewart, Archibald, & Co., 40-48, Union St., Glasgow

PATENT HAWSE PIPE AND DECK FLANGE—
Hamilton, A., & Sons, 13, Bute Crescent, Docks, Cardiff.

PERFORATED METALS—
Braby, F., & Co., Ltd., Eclipse Works, Glasgow.
Piggott, T., & Co., Ltd., Birmingham.

PIPES—
Stewarts & Lloyds Ltd., 41, Oswald St., Glasgow.
Yorkshire Copper Works, Ltd., Leeds.

PLANING MACHINES for Plate Edges—
Scriven & Co., Leeds Old Foundry, Leeds.

PLATE BENDING ROLLS—
Scriven & Co., Leeds Old Foundry, Leeds.

PORCELAIN ENAMELLED CAST IRON—
Levick, John, Alma Street, Aston, Birmingham.

PROPELLERS—
Billington & Newton, Ltd., Longport, Staffs.
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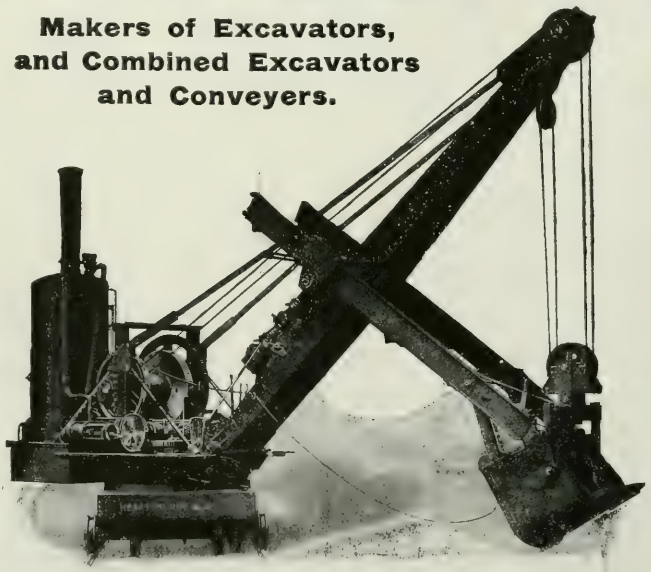

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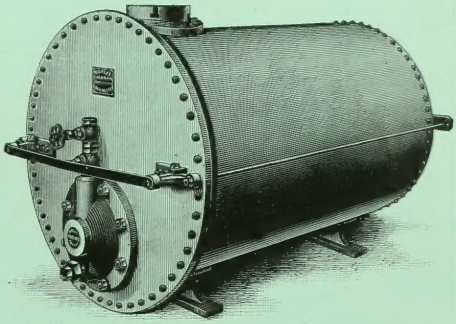

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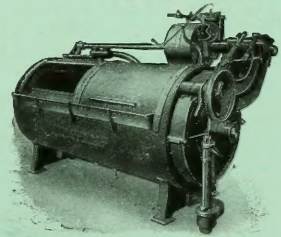

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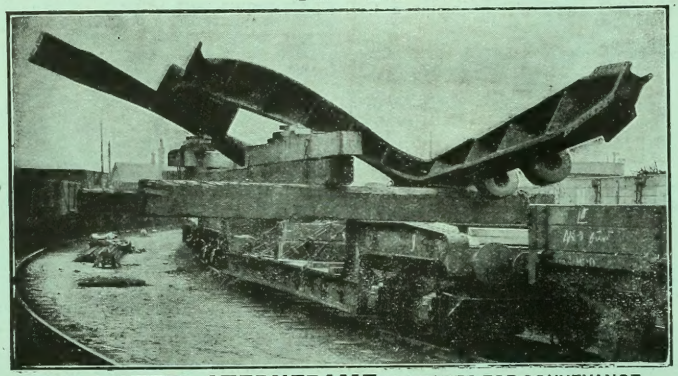

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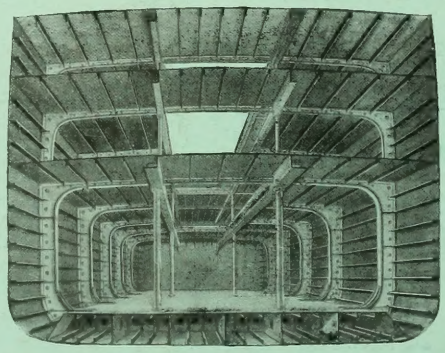

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